COAL AGE

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Partners with the Kaiser

BY FRANK H. KNEELAND

THE United States is engaged in a titanic struggle—a world conflagration—largely because a greedy national autocracy saw fit to break or disregard its plighted oath, to consider treaties made in all sacredness as mere "scraps of paper." The issues at stake are clear, the social and moral obligations distinct. Can we logically expect Uncle Sam, who is battling with all his might for principles of honor on foreign soil, to countenance, much less condone, breaches of faith at home?

President Wilson's reply to the striking machinists of Bridgeport, the taking over of the Smith & Wesson plant by the Government, and Dr. Garfield's recent message to the striking miners of the anthracite region make the Nation's position toward faithless firms or individuals unmistakable. While the country faces national autocratic greed abroad it cannot and will not be hamstrung by individual or class greed at home.

Guns, shells and coal are all war necessities. In this time of national peril, when the very principles of democracy and justice are at stake, whosoever willfully deserts his desk, his lathe or his pick cannot be classed as a mere drone or a slacker—he is a public malefactor. Such desertion cannot now be regarded in the same light as it might be in ordinary peace times. It is now little, if any, short of rank, vile, contemptible treason.

Nor can public opinion be expected to support the action of either anthracite miners or Bridgeport machinists. The payers of war taxes, the purchasers of Liberty Bonds, the buyers of thrift stamps, the conscientious obeyers of the food administration's and other Governmental edicts involving more or less sacrifice, all have a direct and vital interest in keeping the flow of war munitions continuous and unbroken.

Successful prosecution of the war means the practice of team work. Thus far in the conflict American labor as a whole has shown a decided will to do and a marked eagerness to coöperate with the Government of the United States against the common enemy of decency and humanity. The few instances of willful departure from this course are therefore all the more prominent and glaring. And no labor faction can justly claim that thus far the Government has ever been niggardly in fixing or helping to fix labor's compensation.

However, the higher standard by which a striking worker may be judged is a moral standard—a blood test. An idle lathe in a munition factory or an idle working place in a coal mine may in all possibility mean blood needlessly spilled on the already corpse-strewn fields of France. No right thinking person with kith or kin in his country's service can condone, much less sanction or approve, such infamous desertion.

IDEAS AND SUGGESTIONS

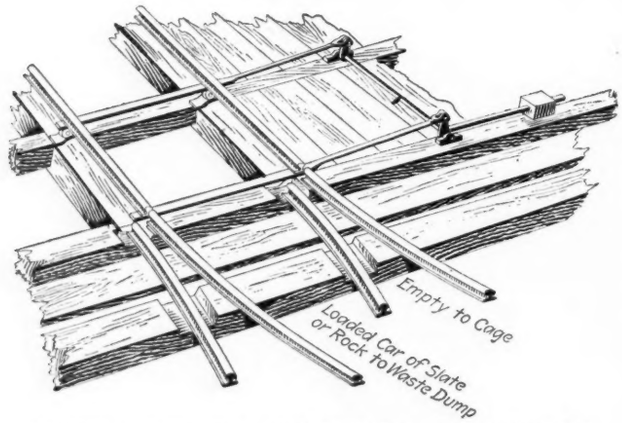
How to Blacken Bolt Heads

Specially prepared lacquers can be obtained from supply houses for giving metal work for electrical switchboards and other purposes a dull black finish. If such preparations are not available, dull black paints, which will serve in emergencies, can be obtained in 10c or larger cans at most hardware stores or paint shops. The following process has been used successfully for giving bright-finish, steel cap-bolt heads a dull black finish. First, heat the bolt to a dull red in a blowtorch flame, then dip it in asphaltum paint. Next burn the paint off with a blowtorch and rub the bolt head with a cloth while it is still warm. If the bolt is permitted to cool before it is rubbed with the cloth, the resulting finish will be glossy instead of dull.

Ramsay Automatic Switch

BY ERSKINE RAMSAY
Birmingham, Ala.

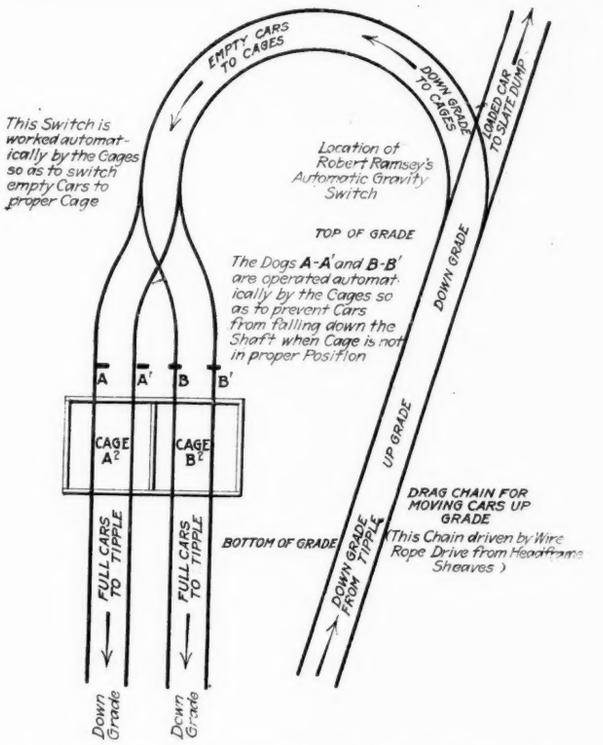
"The Automatic Tipple Switch," which appeared in the Aug. 8, 1918, issue of *Coal Age*, reminded me of the automatic switch which my father designed and installed along about 1880, at the Westmoreland shaft of the Westmoreland Coal Co., at the time he was connected with that concern. Before installing this switch, it was necessary to throw the switch by hand when a car of slate or rock came up, in order to prevent it from running around by gravity to the hoisting shaft.



SWITCH AUTOMATICALLY DEFLECTS LOADED CARS

On one occasion the switch was negligently not thrown, resulting in the loaded car of rock running around rapidly to the shaft, where it broke through the wooden gate and fell to the bottom, striking the cage on which a number of men were standing at the time, ready to be hoisted out. Fortunately, the overhead cover of the cage was strong enough to deflect the car into the bottom landing, and as a result nobody was seriously hurt.

This accident suggested to my father the advisability of getting up a switch that would automatically deflect the loaded cars to the slate dump, and as a result he designed the device shown in the accompanying illustrations. The then local superintendent of the Westmoreland shaft, a large man, contended that the additional weight of a loaded car would not throw the switch, and


EMPTY CARS TO CAGES
DOWN GRADE TO CAGES
LOADED CAR TO SLATE DUMP
This Switch is worked automatically by the Cages so as to switch empty Cars to proper Cage
Location of Robert Ramsey's Automatic Gravity Switch
TOP OF GRADE
The Dogs A-A' and B-B' are operated automatically by the Cages so as to prevent Cars from falling down the Shaft when Cage is not in proper Position
DOWN GRADE
A
A'
B
B'
CAGE A²
CAGE B²
UP GRADE
DRAG CHAIN FOR MOVING CARS UP GRADE
(This Chain driven by Wire Rope Drive from Headframe Sheaves)
BOTTOM OF GRADE
FULL CARS TO TIPPLE
FULL CARS TO TIPPLE
DOWN GRADE FROM TIPPLE
Down Grade
Down Grade

DETAILS OF AUTOMATIC SWITCH INSTALLATION

after some discussion my father made a wager that the switch would be sensitive enough to operate with only the superintendent in an empty car. And on a first trial it worked perfectly. The sketch was made by W. P. Little, a young engineer student then on his vacation from school, and who visited the plant shortly after the switch was put in.

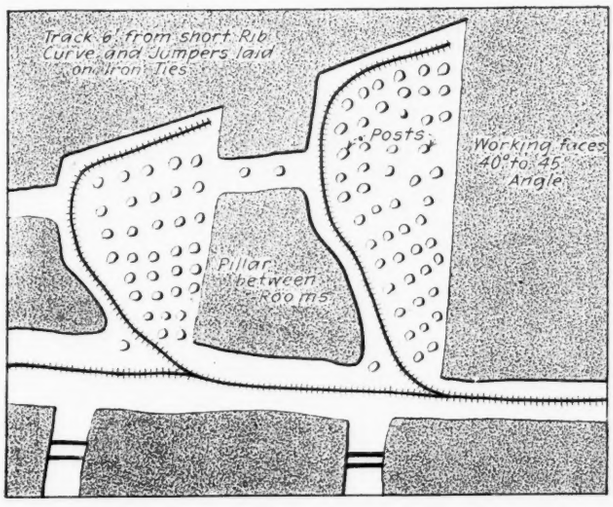
Oblique Faced Rooms

BY G. W. SUTHERLAND
Blakeley, W. Va.

A system of haulage and an arrangement of working face and room tracks that has proved its usefulness is shown in the accompanying illustration. The rooms are driven on 50- to 60-ft. centers, according to the conditions of top and bottom. These rooms are turned at right angles off both entries of a pair. When they are widened out the working faces are cut so as to form a 40 to 45-deg. angle with the ribs. This gives a longer working face without reducing the pillar between rooms. Suppose the rooms are 30 ft. wide from rib to rib, thus

affording a 30-ft. square face. The 40- to 45-deg. angle will increase the working face from 30 ft. to 40 or 45 ft., according to the angle.

This, of course, makes a short and a long rib. The track is laid 6 ft. from the short rib; that is to say, the center of the track is 6 ft. from it. This track is laid straight to within 15 or 20 ft. of the working face so as to allow a good curve and is then extended across the working face. As the face advances the track of course advances with it. To do this the curve is dis-



ARRANGEMENT OF WORKING FACE AND ROOM TRACKS

connected on the outby end from the straight track and thrown ahead with a bar, and short rails or jumpers laid behind the curve.

Where the mining machine undercuts 6 ft. there should be a pair of rails 6 ft. long and two pairs 12 ft. long. Thus when the track has advanced the length of these three pairs of short rails a pair of 30-ft. rails can be laid in their stead. The short rails and curve should be laid on steel ties and the joints fish-plated. Wood ties can be used under the long rails.

Where the roof is weak, timbers may be set up to the inside of the curve. If any impurities occur with the coal these are thrown back between the track and the long rib. Thus the short rib is always clean, and when the room is finished and the pillar ready to be drawn back the track is in place therefor, excepting the curve, which can be turned end for end, in other words, reversed, and in a short time relaid to the end of pillar. This track across the working face can be used to drive break-throughs without extra labor and expense when each room is finished.

If a shortwall mining machine is used to undercut the coal it can be unloaded and loaded from the straight track by disconnecting the curve and throwing it out of the way with a bar. Certain types of shortwall mining machines are provided with a reversible truck and can be loaded and unloaded at any angle.

This arrangement of working faces and room tracks gives the following advantages: (1) A longer working face is secured without reducing the pillars. (2) The same mining machine can undercut more coal with less unloading and loading, and with less moving. (3) Where there is an ample number of mine cars, each loader can have from two to four cars at the working face without being compelled to wait for the gathering locomotive, he can have work for two or three hours according to the size of the cars. If the cars hold two tons, four cars will give the loader eight tons. Two trips per day will allow him to load 16 tons, which is a big average per man. (4) One gathering locomotive can serve from 30 to 40 places with this arrangement and give the loaders all they can do.

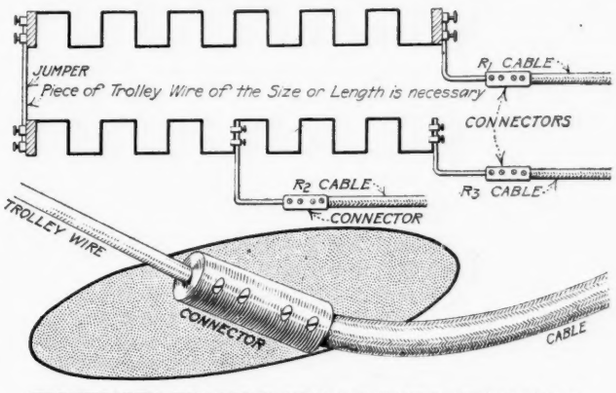
In my experience, when men have to wait an hour or so for their turn they get disheartened and go home. This arrangement keeps them busy. A storage-battery locomotive is the best to use with this layout, but a cable-reel locomotive can be employed with fair success if a double cable is used. By this means rail bonding will not be necessary in rooms.

Resistance Terminal Connections

BY F. W. SAKON
Johnstown, Penn.

On mining locomotives the lead wires that go to the resistance terminals are usually soldered at the ends. After a few weeks' or months' use the solder runs out or melts, thereby leaving the strands of wire loose in the terminal. These then start to burn in the terminal, and when they are to be disconnected the wire must be cut off and the terminal drilled out or the resistance taken apart and the terminal changed.

I have successfully overcome this difficulty by taking a piece of copper trolley wire about 8 in. long, of either 2/0 or 4/0 size according to the diameter of the hole in the terminal, placing this in the terminal and bending it to suit conditions, and then taking a tube connector and joining the resistance lead to the trolley wire therewith and tightening the set screws and tap-

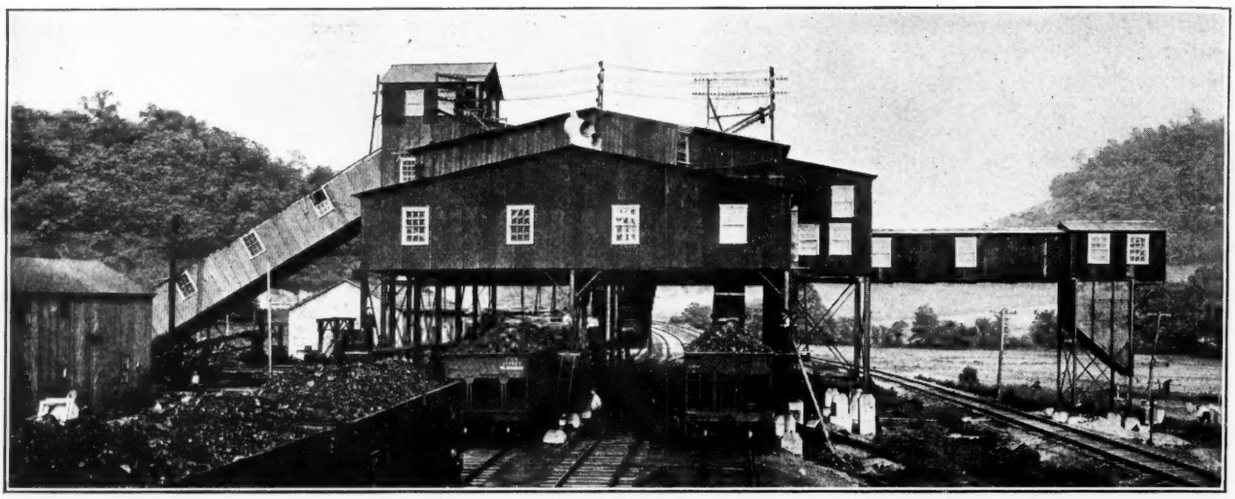


ELIMINATES TROUBLE FROM BURNED TERMINALS

ing them so that the screws cannot work loose. This makes a tight electrical connection and eliminates the trouble arising from burned terminals in the resistance.

I also use trolley wire in making jumpers from one resistance unit to another. I find that these give less trouble than soldering little tubes to short pieces of cable. When it is necessary to loosen the connection for testing purposes, they are more easily inserted again, with less difficulty than the leads which are soldered.

A miner refused to take the advice of a first-aid man and have a scalp wound dressed. As a result infection set in, and he lost several weeks' time. There are more ways than one of being a slacker.



Valley Camp Coal Co.'s Tipple at Parnassus, Penn.

By GEORGE S. JAXON
Philadelphia, Penn.

SYNOPSIS — *This tipple is designed to make four sizes of coal, the two larger of which are hand-picked. Bone is crushed and used as boiler fuel. A unique feature of the plant is a conveyor designed to facilitate cleaning the tracks under the tipple of spillage from the cars after the day's run.*

ON THE banks of the Allegheny River in Westmoreland County, Penn., approximately 18 miles northeast of the City of Pittsburgh and situated on the Buffalo & Allegheny division of the Pennsylvania R.R., lies the town of Parnassus. On the outskirts of the village is located one of the most modern and up-to-date steel tipples in the bituminous coal fields of the state, the property being known as the Kinloch Mines. The Valley Camp Coal Co. commenced mining operations here in the year 1917, working the upper and lower Freeport seams. The lease contains about 2500 acres of coal, which averages 84 in. in thickness. The president of the company is James A. Paisley, of Cleveland, and the general manager and superintendent H. E. Kinloch, of Parnassus. The development of the mine is carried on by the wall-and-pillar system through a slope driven on a 30-deg. inclination. Electrical power is utilized for both the inside and the outside operation, and a working force of approximately 330 men is employed. The output for the last fiscal year was 505,274 tons of run-of-mine coal. The coal is brought in wooden mine cars from the working face to the foot of the incline inside the mine, where it is transferred to power-driven machinery for removal to the tipple structure for the necessary sizing and loading.

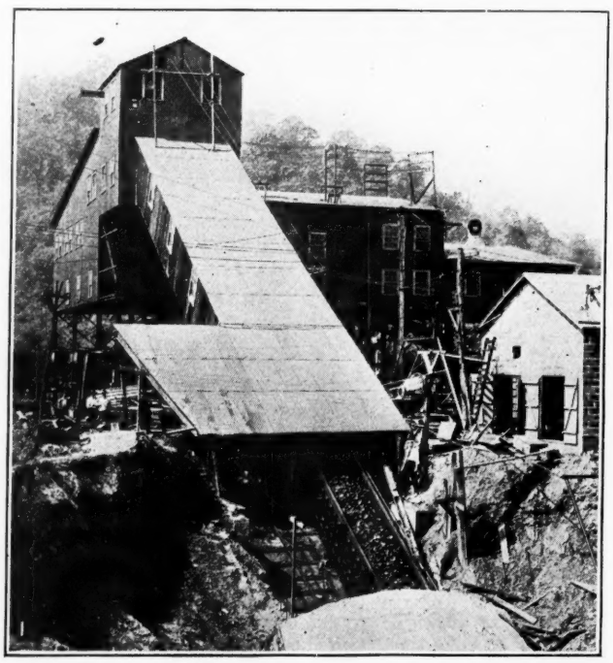


FIG. 1. OUTSIDE VIEW OF TIPPLE EQUIPMENT

The coal company, being desirous of preparing its output for market in the best and most economical manner, sent out requests for competitive bids covering an equipment capable of handling an hourly output of 450 tons of bituminous coal based upon the following percentages of different sizes: Lump, 25 per cent.; egg, 18 per cent.; nut, 17 per cent.; slack, 40 per cent. The following is a detailed description of the equipment finally accepted by the company as being the one most suitable for the requirements. The leading illustration shows a general outside view of this equipment. The mine cars, which are of 2½ tons capacity with a gage of 44 in., are delivered to a Phillips automatic cross-over dump by which they are emptied into a steel hopper of five to six tons capacity. Under this hopper is located a steel apron

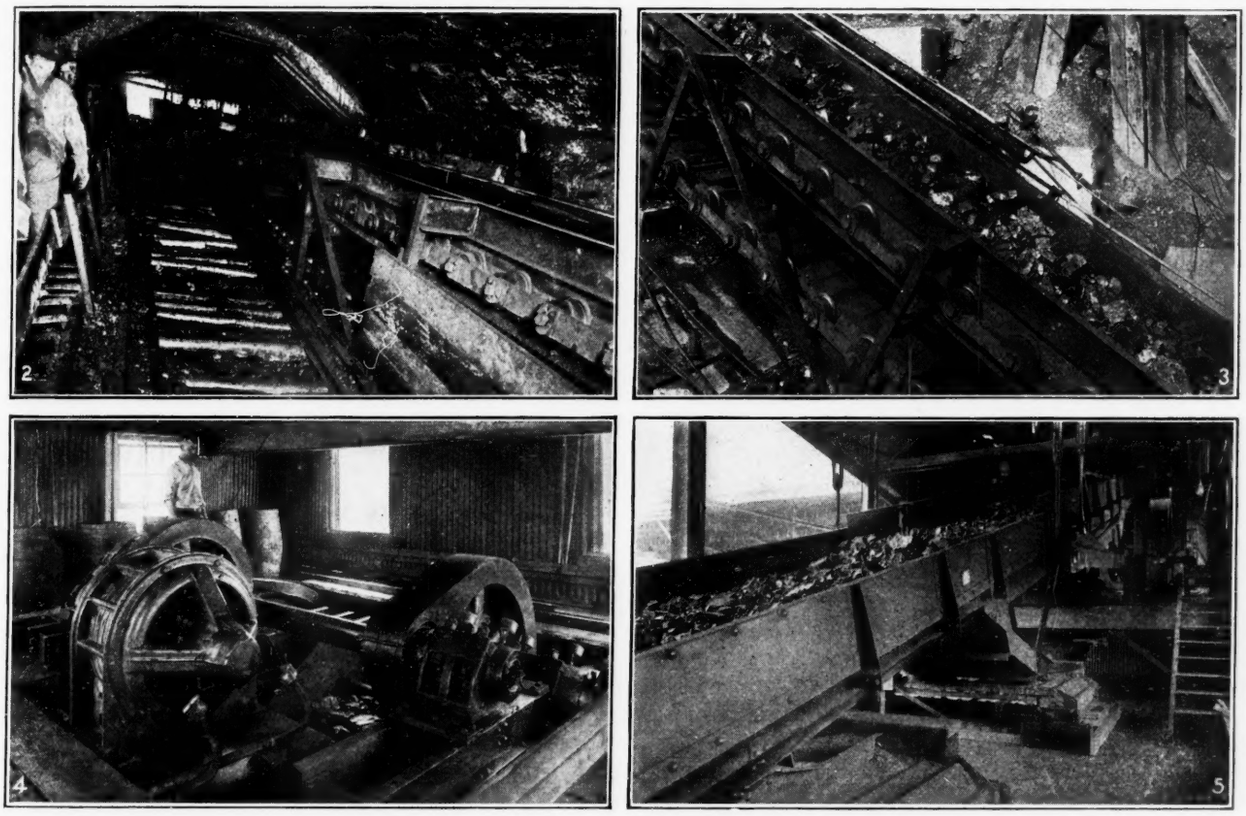
feeder conveyor 42 in. wide, which feeds the coal at a uniform speed over a slack bar screen onto the steel pans of an inclined apron conveyor. The feeder is constructed of ¼-in. steel pans mounted upon a double strand of 9-in. pitch steel-strap roller chain, which travels upon a 30-lb. T-rail track. The coal being screened before its delivery to this unit insures a cushioning effect that tends to preserve intact the large-sized coal. This passes over the screen and onto the conveyor, which already carries the small material.

The conveyor is slow moving, having a speed of 75 ft. per minute and an entire length of 428 ft. from the center of foot sprockets to the center of head sprockets. Of this length 403 ft. is on an inclination of 30 deg., while the remainder at the foot end is horizontal. This unit is employed for delivering the coal from the dump hopper to the shaking screens. The conveyor pans are constructed of $\frac{3}{16}$-in. steel plates of the double-beaded, corrugated, overlapping type, with a bead in the center to act as a stiffener. At the same time this prevents the coal from sliding back when traveling up the incline. The apron pans are attached to a double strand of special 18-in. pitch, forged-steel strap roller chain, the side bars of which are made of ½ x 5-in. steel flats with ends swelled to 1 in. in thickness. The joints are constructed with 2¼-in. diameter case-hardened steel pins, having milled ends fitting in the outer side bars, while steel bushings are introduced locked in the inner side bars. These bushings carry 8-in. diameter, flint-rim tread, single-flanged, inclosed oiling rollers, which in turn travel on a double track of 30-lb. T-rails, which form part of the structural steel supporting framework. Traveling steel side plates are used to insure a perfectly clean unit, while a continuous stationary side plate of No. 10 steel is placed above the entire length of the conveyor pans for the purpose of easily carrying the capacity of 450 tons per hour.

At the head of this conveyor a substantial steel discharge chute delivers the coal either to the shaking screens or by means of a mechanically operated fly-gate diverts the run-of-mine through the slack hopper to railroad cars upon the nut track. This is employed in case of emergency, when for some reason parts of the tipple machinery may be out of commission.

The foot shaft is equipped with a chain sprocket for operating the apron feeder through a strand of combination drive chain. Fig. 2 shows a view of the conveyor traveling up the inclined slope. Fig. 3 shows the same conveyor with the coal on the upper strand. In Fig. 4 is shown the 150-hp. electric motor with back gearing, which actuates this unit.

The coal is delivered from the conveyor onto the shaking screens, which are moved back and forth at the rate of 100 shakes per minute. The screens are of the hanger type, 7 ft. 6 in. wide, with sides approximately 12 in. deep. They are constructed of steel throughout and stiffened by means of structural shapes. Great care was exercised in designing these screens to prevent excessive drops to the coal, thereby eliminating breakage as far as possible. Fig. 5 shows the coal passing over the shakers with steel veil plates in their



FIGS. 2 TO 5. VIEWS OF CONVEYOR FOR DELIVERING COAL FROM DUMP HOPPER TO SHAKING SCREENS
Fig. 2—A view of the conveyor traveling up the inclined slope. Fig. 3—Same conveyor shown in Fig. 2, with coal on the upper strand. Fig. 4—The 150-hp. electric motor which actuates the conveyor. Fig. 5—Coal passing over the shakers.

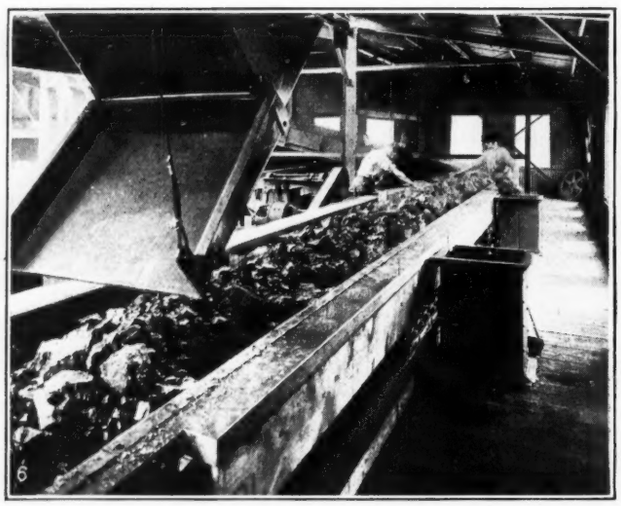


FIG. 6. LUMP TABLE AND PICKERS AT WORK

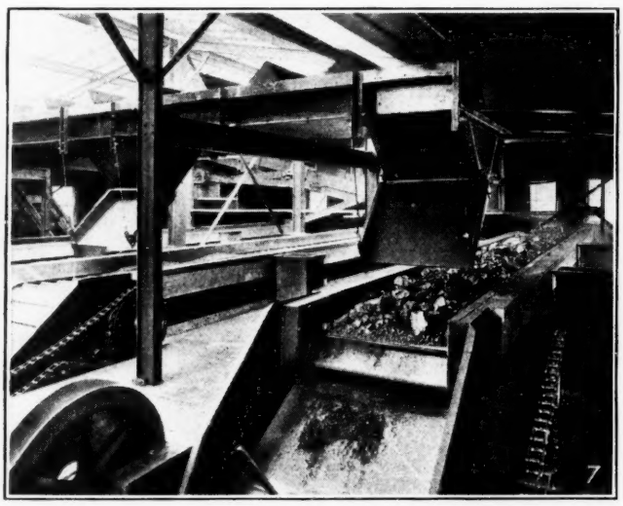


FIG. 7. INTERIOR VIEW OF PICKING HOUSE

bottoms for the purpose of loading run-of-mine coal onto the lump-coal picking table. The shaking screens are operated by means of an eccentric shaft of sufficient size and strength to oscillate them at the speed mentioned above. Eccentrics of the ball-and-socket type are utilized to insure perfect alignment.

Considerable care has been exercised also in the design of the picking house, so as to secure ample lighting and ventilation. This insures the proper cleaning of coal before its delivery to the railroad cars. Fig. 6 shows a view of the lump table and the pickers at work. Fig. 7 is a view of the interior of the picking house, showing the lump, egg and nut tables. The amount of light secured from the skylight visible in this illustration may be readily perceived.

The picking tables discharge their contents over perforated plates in discharge chutes. These take out the final breakage that has been made by the pickers on the tables, before delivery is made to the loading booms.

The tables are constructed of $\frac{3}{16}$-in. steel corrugated pans, mounted on a double strand of steel-strap chain whose joints are $\frac{3}{4}$-in. steel pins, carrying steel bushings encircled with $3\frac{1}{2}$-in. single-flanged rollers traveling on 20-lb. T-rails, carried on structural-steel frames throughout their entire length.

The coal is delivered from the picking tables over the discharge chutes to the loading booms. These convey it to the railroad cars. Fig. 8 shows a typical view of the lower floor with the booms passing through openings therein to the cars. The booms are of the same general construction as the picking tables and are of ample capacity. Fig. 9 shows a general view of the machinery for driving the picking tables and loading booms, with all gears and chain drives properly protected by steel guards.

The refuse and bone picked from the tables is delivered to the bone conveyor by chutes, the bone to the upper strand and the refuse to the lower strand. The refuse travels on the lower strand to the steel bin shown on the right in the leading illustration. This bin is constructed of $\frac{1}{4}$-in. plate and is equipped with draw-off valves at the lower end of the hoppered bottom to facilitate loading into railroad cars on the outside track. The bone is conveyed along the upper strand to the bone coal crusher, which reduces this product to slack size for fuel purposes. The conveyor in question is composed of suspended $\frac{5}{16}$-in. steel flights, attached to a double strand of 12-in. pitch steel-strap roller chain at 36-in. intervals. The steel flights measure 8 in. deep and 20 in. long. This unit measures 112 ft. center to center and is mounted inside of a structural-steel frame throughout its entire length.

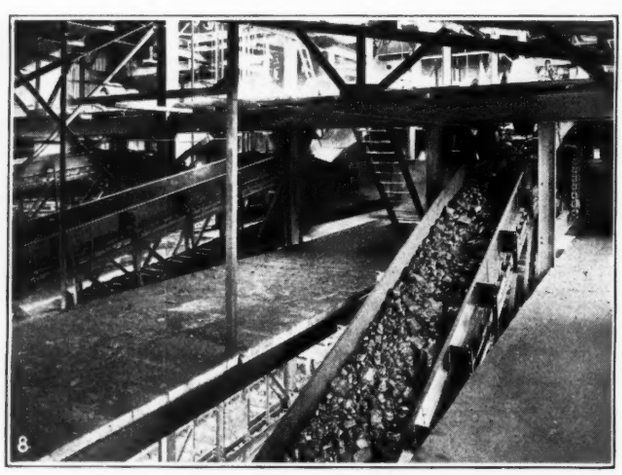


FIG. 8. TYPICAL VIEW OF LOWER FLOOR

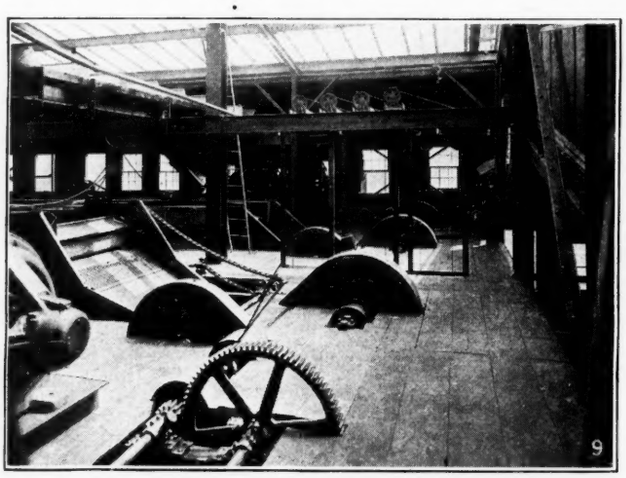


FIG. 9. GENERAL VIEW OF DRIVING MACHINERY

The slack coal is delivered from the shaking screens by means of a hopper and chute direct to the slack conveyor. This conveyor is made up of ¼-in. steel-plate flights measuring 10 in. deep and 36 in. long, rigidly attached to a double strand of 12-in. pitch steel-strap roller chain at intervals of 36 in. The chain is made up of 2½ x ⅜-in. steel flats and the joints constructed with ¾-in. diameter steel pins provided with case-hardened steel bushings carrying 3¼-in. solid straight-face cast-iron rollers. On both the carrying and return runs the chain rollers travel on steel angle trackage, which forms part of the structural-steel frame in which the conveyor is mounted. Provision is made at the discharge end for delivering to railroad cars. This conveyor is shown in Fig. 10.

The mixing conveyor is employed for delivering lump, egg and nut coal to the crusher or for mixing the foregoing sizes with slack for delivery to any of the tracks. It is located at the discharge end of the picking tables, where the lower strand passing beneath the tables collects the different sizes of coal by means of a fly gate in the table discharge chutes. The coal is then carried along this strand and up the vertical strand to the upper runway, where by means of valve openings it can be delivered to the crusher or to the different tracks. This unit is composed of gravity discharge buckets measuring 24 in. wide by 54 in. long and 11 in. deep, rigidly attached to a double strand of 18-in. pitch steel-strap roller chain at intervals of 36 in. The side bars of the chain are made of ½ x 2½-in. steel flats with joints constructed of 1¼-in. steel pins. These are provided with case-hardened steel bushings carrying 5-in. straight-face, flint-rim tread, inclosed oiling rollers fitted with Bennett self-closing oilers.

The entire machine runs on steel tracks supported by structural steel framework, which in turn is securely attached to the driving terminal and corner shaft supports. The buckets are guided on the vertical runs by means of steel angles. This machine is driven through gears from an electric motor. Fig. 11 shows the lower strand of this conveyor, while in Fig. 8 the discharge chutes from the top strand for mixing purposes is clearly shown. In connection with this conveyor a clean-up elevator is employed for the purpose of ridding the tracks beneath the tipple of the spillage which accumulates at the end of a day's run.

At the time the accompanying photographs of this equipment were taken the erection was not quite completed. However, Fig. 1 shows a second typical outside view of the equipment. The long inclined conveyor carrying coal into the tipple may be here plainly seen.

The electrical equipment for operating all the apparatus here described may be enumerated as follows: One 150-hp. motor for driving the inclined conveyor and apron feeder; one 35-hp. motor for driving the shaker screens; one 30-hp. motor for the picking tables, booms, boom hoists and slack conveyor; one 40-hp. motor for driving the mixing conveyor and the clean-up elevator; one 7½-hp. motor for the refuse and bone conveyor; one 150-hp. motor for the large run-of-mine crusher; one 35-hp. motor for the small bone-coal crusher. These are of the General Electric Co.'s make and are complete with automatic starting panels arranged for push-button control.

The tipple building is of steel construction, covered on sides and roof with "Duck Brand" corrugated asbestos-protected metal. The picking house section is equipped with "Lupton" steel frame skylights and "Larson" suction ventilators. The entire equipment was designed, fabricated and erected complete by the Link-Belt Co., of Philadelphia, Chicago and Indianapolis.

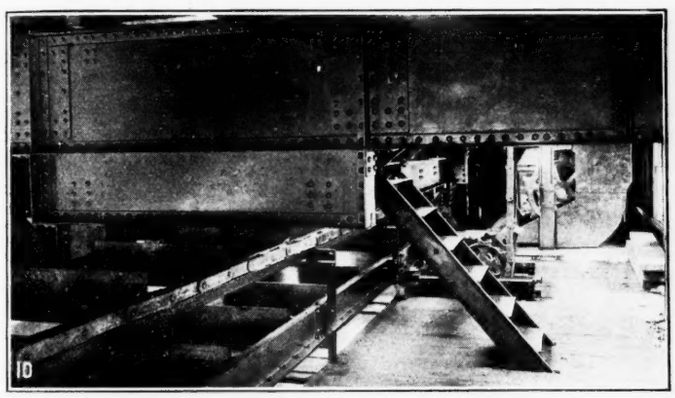


FIG. 10. THE SLACK CONVEYOR

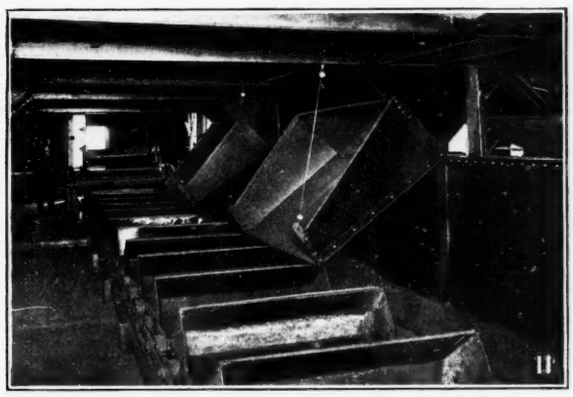


FIG. 11. LOWER STRAND OF CONVEYOR

Excess Air and Heat Efficiency

For a given furnace and a given fuel there is a certain percentage of excess air which gives the maximum over-all efficiency of a steam-generating apparatus. If the supply of air is increased beyond this percentage the over-all efficiency drops because of the heat lost in heating this extra air. If, on the other hand, the air supply is decreased below this best percentage, the heat losses increase on account of less complete combustion. These are the two principal causes of heat not being available for a boiler and the ones that are at all times affected by the air supply.

The percentage of excess air giving the lowest sum of these two combined losses varies with the size of the combustion space and the kind of coal. When the combustion space is large smaller air excess is necessary to obtain good combustion than when the combustion space is small. With coals having low percentages of volatile matter less excess air is needed for nearly complete combustion than with coals having high percentages of volatile matter.

Shipping Facilities at the World's Largest Coal Mine

By R. W. MAYER
Connellsville, Penn.

SYNOPSIS—*A mine that produces 7000 tons of coal per day requires somewhat elaborate tipple arrangements, especially as this tonnage may be shipped either by rail or river. In order to handle the output mine cars must be dumped at the average rate of one every 12 sec. throughout the entire day. Sometimes this speed is exceeded.*

AN ACRE of coal a day is removed from underground in the Vesta No. 4 mine. When working to capacity and full handed, this operation employs about 2200 men. Nearly 300 miles of steel track is in use in the mine, or 600 miles of steel rails. The daily output is in the neighborhood of 7000 tons of coal.

Last year this one mine produced 1,795,000 tons. When the fact is taken into consideration that during the winter months when the Monongahela River was frozen and shipments went by rail the mines had to work at only partial capacity, this output can be considered large. A comparison may make the large tonnage more striking. The State of Washington has 63 producing mines, which last year mined 3,623,196 tons of coal. The output of Vesta No. 4 mine was almost half as much as that of the entire state, which is the largest coal producer in the Northwest.

Vesta No. 4 mine is probably the largest coal mine in the world, and to any one interested in mining the methods employed here as well as the mine itself are fascinating. It is situated near California, Penn. California is a clean, beautiful, little city, the home of retired capitalists and the State Normal School. It is situated 50 miles south of Pittsburgh, on the Fourth Pool of the Monongahela River. The Pennsylvania R.R. runs through it, while the Pittsburgh & Lake Erie R.R. follows the opposite bank of the river.

The mine is operated by the Vesta Coal Co., J. B. Laughlin, president, and B. F. Jones, general manager. This company is a subsidiary of the Jones & Laughlin Steel Co., which consumes all the coal the Vesta Coal Co. produces and has to buy more. Ninety-two per cent. of the steel manufactured by this company is now sold to the United States Government.

The Vesta No. 5 mine produced 1,340,000 tons of coal last year. Vesta No. 6 has a daily output of about 2500 tons. It is not unusual for this mine to produce 12 tons per day for every man working at the face. Vesta No. 7 mine, which is just being opened on a large scale, will begin shipping coal about Nov. 1 of this year. It is on the left bank of the Monongahela River, opposite Silicia. The Crescent mine of the Pittsburgh Coal Co. adjoins these mines; last year its output was 1,115,000 tons of coal.

All of these operations are in Washington County, Pennsylvania. In this county 118 companies operated 161 mines last year. It is estimated that there are approximately 3½ billion tons of coal in Washington County yet to be mined, or about 448,000 acres of the Pittsburgh bed. The market value of this unmined coal is about nine billion dollars.

The Vesta Coal Co., the largest shipper of coal by water, owns and operates seven steamboats and over 100 steel and wooden barges. It recently let a contract for 50 more all-steel boats to be used for carrying coal on the Monongahela River. It is expected to turn them out at the rate of about seven a month. They are now being built at the South 34th St. plant of the Jones & Laughlin boat-building department. The all-steel steamer "Elsey," now being built at Neville Island by the Davis Engineering Co. for the Vesta Coal Co., should be in the water by Oct. 1. It is named in honor of the company's transportation manager.

Will Soon Construct New Marine Ways

At the present the company has not sufficient facilities for repairing its boats. It will soon commence the construction of new marine ways to be over 200 ft. long. These will be built below the Wilton tipple, above Lock 3, on the left bank of the Monongahela River. The barges at present in use are from 100 to 200 ft. long. A 200-ft. barge holds about 1000 tons of coal. It is brought under the tipple for loading, is loaded, and replaced by another empty barge in 50 min. Barges 150 ft. long hold about 775 tons. The 100-ft. barges hold 450 tons and are loaded in 18 min. It requires from 24 to 36 hr. for the steamer to tow loaded barges from No. 4 mine to the company's works at Pittsburgh and return with empty barges. A steamer usually tows four large barges and one small one.

Landing boats on the river at the tipple, with boilers and engines, are provided also with steam pumps which pump the water out of the barges. One end of the barge sinks when loading is commenced, causing the water to flow to that end. It is then easily pumped out. The steel barges are only pumped out once each trip, pumping being done at the tipple. The wooden barges have to be pumped out oftener. The steel barges are lined with wooden planks to save wear on their hulls.

The coal is loaded into the barges at the tipple in three layers to equalize the stress on the hull and prevent it from becoming "hogged," or broken. The barge is accordingly moved back and forth under the coal chute. All the coal from the tipple is loaded from one chute. A long steel boom with a sheave on its end, over which a steel cable runs, extends out on each side of the tipple over the top of the barge.

The cable which runs over the sheave on the lower boom is fastened to the upstream end of the barge. The cable running over the upper boom is fastened to the

downstream end of the barge. These cables are wound upon the drum of a steam donkey or hoisting engine, which is placed in the tipple directly over the river. The donkey engine pulling on these cables quickly moves the barge back and forth under the tipple coal chute.

A man stationed on the barge signals the donkey engineer how to move the barge by pulling a whistle cord. While the barge under the tipple is being loaded another empty one is placed upstream from and end to end with it, and the ends of the two barges are fastened together. When one is loaded it is pulled out from under the tipple by the cable on the donkey engine, and the empty barge, fastened to the end of the loaded barge, is pulled under the tipple chute by the same action, the loading being continued without interruption. The donkey engine cables for moving the barge under the coal chute of the tipple are quickly changed from the loaded barge to the empty one while one of its ends is receiving coal.

How the Work is Divided

One crew of men has charge of the loaded barges and another sees that the empty barges are placed in position as needed. A man stationed on the loading barge picks out what rock he can find. As the coal is fairly clean the amount of rock thus removed is small. An analysis of the coal shows about 3 per cent. of ash. About a foot of slate or cap rock overlays the coal and must be taken down. If this is carelessly allowed to become mixed with the coal, ash content may go to 15 per cent., but in practice seldom exceeds 9 per cent. As this drawslate is white in color it makes a contrast with the coal and is easily seen.

About 400 ft. above the tipple is an ice-breaking pier to which the barges are moored. This is built of heavy cribbing drift-bolted together and filled with rock. The tipple is an all-steel structure extending out over the river. Its outer end rests on a heavy cut-stone pier set at the edge of deep water on the river bank. Heavy concrete bulkheads extend from the pier back to the top of the river bank. Bulkheads, built of logs drift-bolted together and filled in behind with rocks, extend for several hundred feet up and down the stream from the tipple along the river bank. These are flush with the cut-stone pier under the tipple and are at the edge of navigable water. As they are in line with the tipple pier and in deep water they facilitate the movement of the barges and prevent them from grounding on the river bank.

The Pennsylvania R.R., whose lines follow the Monongahela River bank, has tracks underneath the tipple, while adjoining the railroad tracks is a street which branches into a wye directly underneath the tipple. The tipple crosses these on a single span having but one support, which is placed between the street and the railroad tracks.

Last winter the Vesta Coal Co. broke the ice in the river from Pittsburgh to Vesta No. 4 mine in order that river shipments might not be interrupted. Ice breakers were employed and the steamboat captains say the ice was 3 ft. thick at times. When the dam at one of the locks broke it lowered the water to such an extent that the barges had to be loaded to draw only 12 in. of water. This not only made transportation charges on the coal excessive, but what was more vital the requisite amount could not be handled. The Fuel Administrator in one day commandeered 400 carloads of coal in the freight yards at Connellsville for this company's use. The Jones & Laughlin Steel Co. at that period of car shortage used its own cars and locomotives on the Pennsylvania R.R. tracks for hauling coal from Vesta No. 4 mine.

A rubber belt conveyor line about 400 ft. long extends from the tipple at a level lower than that of the railroad tracks and parallel with them up to an elevation sufficient to load railroad cars. This conveyor line will handle the mine's capacity of production. A heavy electric motor with drums and cables, anchored to a concrete base, has been installed this summer to handle the loaded and empty cars after river navigation closes. As the coal is dumped at the rate of a 50-ton railroad car full in about 3 min. throughout an 8-hr. day, it is necessary to move the cars with ease and rapidity. No coal is shipped by rail as long as the river is open.

Between 2000 and 2800 mine cars of coal are dumped each day. These hold about three tons each, but if they are topped heavily four tons can easily be put on them. Two crossover dumps are used for discharging the cars. At each dump one man handles the dumping lever and hooks the ring on the car door, which automatically raises it as the car is tilted; another man removes the miner's checks; a third regulates the speed of the car by pushing or braking it as it moves toward the dump; another does nothing but work the lever that throws the switch, shunting cars to each of the dumps in turn; another man pulls the coupling pins as the cars move to the switch. He also shoves the coupling link to one side but does not remove it. Thus when the car strikes the one on the crossover dump and bumps it off, the coupling link is not in the way.

Chain Haul Pulls Trips to Dump

The loaded track is level or has only a slight grade as far as a chain haul, which carries them up a short grade about 10 ft. long. This chain haul is used to pull the entire loaded trip and feed it toward the dump, the coupling pins of the cars not being pulled until the cars are near the end of the haul.

At the top of the chain haul the switch is located which leads to the two dumps. The cars run from here to the dumps by gravity. They also pass by gravity through the dump onto the kickback at the end of the tipple and back onto the track for empties. Two kickbacks are employed, one for each dump. The cars are switched automatically by spring switches from both of these onto a single track for empties. A man is stationed at the kickback to give a stiff-moving car a shove and in general to prevent any tie up.

After passing through a crossover dump and kickback the empty cars have dropped, of course, to a low level. They are again raised by means of a chain haul. Here another man does nothing but couple the cars together as they come over the knuckle. The cars are oiled by a man who works between the loaded and empty tracks. The wheels on one side of the cars are oiled on the loaded track and those on the other side when the car returns on the empty track.

A 1-inch endless cable extends for 1500 ft. out from the tipple. This is guided by suitable guide sheaves and is driven by having four loops of cable passed around two grooved drums, placed tandem, the rope being in

contact with only half the circumference of each drum, the same as in the Whiting system of hoisting. An electric motor suitably back geared supplies the power.

This endless rope is used to move the trips of cars on the tipple. A special clutch is employed which grabs the cable and is coupled to the first car of a trip. As the cable moves the trip of cars goes with it; 120 to 140 cars are hauled at one time. As the cars are almost 10 ft. long each over all, a trip of cars is from 1200 to 1400 ft. in length. The tipple and steel bridge from the mine mouth to the river is about 3000 ft. long and 43 ft. high at its highest point, although the height is about uniform throughout its entire length. About 2000 ft. of this length is double-tracked. The right track is used as storage space for the loaded trip while being dumped and the left track for the empty trip of cars.

The coal from each crossover dump passes down through a crusher and thence moves by gravity to the barges on the river. In an emergency either crossover dump with its connected crusher would probably be able to handle the mine output.

Two scales are used for weighing the coal, one for each dump. They are placed between the crossover dumps and the switch on the loaded car tracks. A bridge about 12 ft. above the track carries two large rooms almost entirely inclosed with glass, one for each weighman, his scale beams and desk. As the cars pass over the scales on the track beneath, the weight is shown on the scale beams in the office on the bridge and is marked down on a weigh sheet. As the man at the dump removes the miner's checks from the car he files them on a spindle or needle-shaped steel wire passing through the hole in the check. The car checks are thus filed in the same order on this spindle as the car weights are placed on the weighman's sheet.

A clerk who has his station on the bridge coördinates all the car weights with the proper check numbers. He does this continuously throughout the day, not waiting until the day's run is over. A messenger carries the empty spindles from his desk on the bridge to the man taking the checks from the cars at the dump and returns with the spindle filled with car checks. As the weighmen's rooms are inclosed with glass it is therefore an easy matter for them to see what is occurring on the floor beneath.

Dumping 2400 cars in 8 hr. requires five cars to be dumped every minute continuously, making no allowance for time that may be lost. Such losses sometimes require that cars be discharged even more rapidly.

The material and supplies for the mine are delivered in railroad cars on the siding under the tipple. The mine cars are run alongside the railroad cars and loaded from them. Track of the proper gage is laid for the mine cars between the rails of the standard gage railroad track. The mine cars loaded with supplies from the railroad cars are moved on this track to a point directly underneath the side of the tipple, where a steel derrick capable of handling 50 tons is installed. A chain of sufficient strength is given one turn around the drawhead of the mine car and a hook attached to the chain, hooked over the top of the car end. One chain is placed on each end of the car in this manner, and the free ends of the two chains are fastened to a ring which is hooked onto the end of the derrick cable. The derrick hoists the mine cars from the railroad track up onto the tipple, a distance of about 40 ft. The cars are here landed on the track by two men.

The track on which they are landed is a spur from the empty car tipple track and is outside the tipple roofing. This allows freedom of movement overhead for the boom of the derrick to swing. The empty cars are lowered from the tipple to the railroad tracks in the same manner as the loads are hoisted. A 30-ton haulage motor used in the mine was easily and quickly raised from the railroad track to the tipple track by this derrick, the engine for which is placed in the lower part of the tipple, under cover.

Carbonization and Distillation of Peat

By M. Meredith
Liverpool, England

C. Galaine and C. Houlbert recently submitted a paper to the Paris Academie des Sciences on the carbonization and distillation of peat, sawdust, household refuse and other light organic products. The value of peat lies in the direction of distillation rather than combustion, and in these lines it could supersede wood in the production of acetic acid, methylated spirit, ammonia and tar, the basis of so many dyes.

In the process of distillation, peat, being a light material, requires larger retorts than coal, and these should be of a design that facilitates the transmission of heat from the surface toward the center. Experiments have shown that revolving retorts produce the best results. The apparatus devised and described by the authors is on the principle of the roasting appliances used for coffee, chicory, etc., but of course, with the addition of a receiver for collecting the distilled vapor, the great object being to provide an apparatus complete in itself for continuous and all-round operation.

This apparatus consists of six cylindrical retorts, each mounted on its own axis and capable of uniform rotation, while the individual cylinders are arranged in radial relation to a rotary central pivot, so that the retorts charged with peat can be entered into and withdrawn from a stationary semi-circular furnace in succession.

When the apparatus is in operation there are always three retorts undergoing distillation in the furnace, the other three being outside—one condensing, another being emptied, and the third recharging. The distillation takes on an average about 40 minutes for retorts holding a ton of peat and making six revolutions per minute.

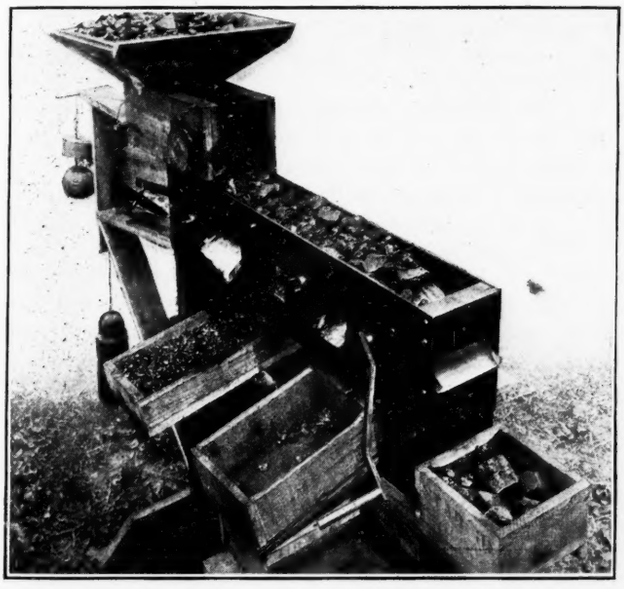
To enable the gas arising from the carbonized peat to pass out of the retorts, the hollow shaft of each is perforated so as to provide a passage from the inside of the retort to a collecting chamber in the axis of the pivot and thence to the stills for fractional distillation. The rotary movement of the retorts insure rapid transmission of heat from the furnace, and as this heat acts on a large surface, the peat is uniformly carbonized in a short time at a relatively low temperature—a result which, it is claimed, it is impossible to obtain by the utilization of any other process.

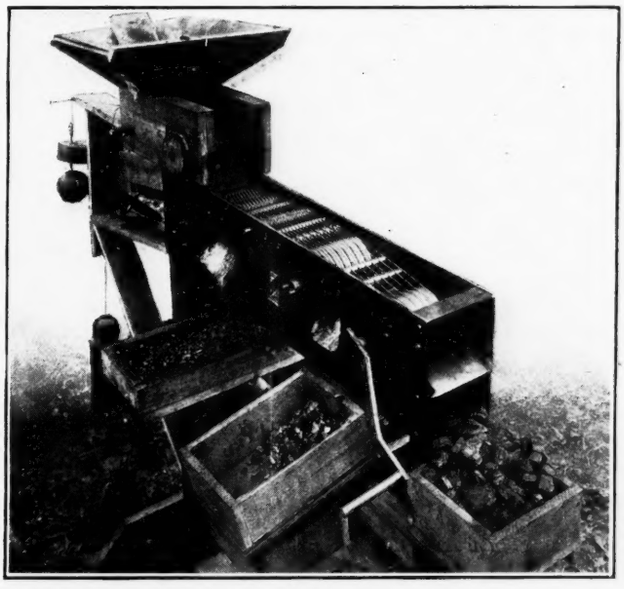
A New Type of Screen

By M. RAYMOND
Tiffin, Ohio.

SYNOPSIS — A modified form of the American system of rope transmission may be used for coal screening. This possesses many advantages, not alone confined to the screen itself.

PRESENT conditions make it imperative for coal production to be as efficient as human brains and brawn can make it. The economical value of sized and cleaned coal is clearly demonstrated by the premium placed on prepared fuel by the Government in this crucial period of American history. Therefore, anything that will contribute to the more efficient production of sized and picked coal should be brought to the attention of operators and tipple experts at once. The records of the Patent Office contain data on an invention that gives promise of introducing radical changes in tipple design and construction that will make for greater efficiency and economy in coal preparation.





FIGS. 1 AND 2. SHOWING WORKING MODEL FULL AND EMPTY

Generally speaking, inventions are of two kinds. One sort is based on an entirely new idea or law in science or mechanics while the other is an adaptation of a familiar device to a new use with such modifications as the new use may indicate. It is those of the latter class that are so simple and so self-evident that we are often led to exclaim, "Why didn't I think of that?"

The particular device under discussion has its base in the application of the multiple rope drive to coal screening. No doubt a large majority of *Coal Age* readers have seen many rope drives where the driving wheel or sheave carries a large number of ropes which are taken off in groups to several driven sheaves. The driving sheave may send out 20 ropes to four or five different parallel lineshafts, each shaft taking as many ropes as its power load may require. If three shafts are in approximately the same horizontal plane and are arranged so that every alternate rope is wound around the sheave nearest the driver, while its neighbors on either side pass on to the next sheave, it will readily be seen that the spaces between the second and third sheaves will be twice as wide between ropes as the spaces in the section between the first and second sheaves.

Now let the ropes be wire cable with enough tension to keep them taut and prevent horizontal spreading or swaying and you have the underlying idea of the Landahl patent cable screen. The section between first and second sheaves is the slack screen; between the second and third is the egg screen, while the lumps pass over the end.

Of course, in practice there are refinements embodied in the actual machine that do not appear in the foregoing. These are the result of long careful study and experiment with the model, of which illustrations appear herewith. The model here pictured is built exactly one-twelfth the size of a screen designed for a capacity of 200 to 250 tons an hour, depending on the speed of the ropes. These refining details will best come out in a description of a typical three-track tipple, such as is shown in Fig. 3, while the results will in no way be inferior to the separations given by the model and shown in Figs. 1 and 2.

Coal is received in the dump hopper, which is fitted with a flygate for bypassing to the inner track, where unpicked mine-run is to be loaded. If coal is to be picked and screened, a reciprocating feeder driven from the cable sheave tailshaft feeds the coal onto the first section of the screen, where slack falls through the narrow spaces between the ropes to a collecting chute. (In the model a tiny belt feeder is used.) The run-of-mine, however, contains big lumps, and these carry slack on their tops; the problem thus arises of spilling this from the lumps without breaking the big pieces by a jar or fall. This is accomplished by fitting three

of the idler shafts near the end of the slack screen with stirring cams, which turn or roll the lumps sufficiently to spill the slack off them without making more slack by concussion. A sketch of these cams, which rotate with the travel of the coal, is shown in Fig. 3.

Suppose it is desirable to pick both the egg and the lump—and this should be done more frequently than is now the case—all that is necessary is to put steel plates between the rolls, directly under the ropes in the next section. No separate belt conveyor or steel apron conveyor is required for picking. This may be done on the screen itself without the rather severe exercise of the optic nerve or muscle which accompanies the removal of refuse on a shaker.

In the egg screen, the process is similar to that in the slack section, with stirring rolls as before followed by a plain steel section of sufficient length to slide the lump into the chute over the outer track. All that is necessary to mix the various sizes as may be required is to run a scraper conveyor beside the screen from feeder to the lump chute and discharge the screened

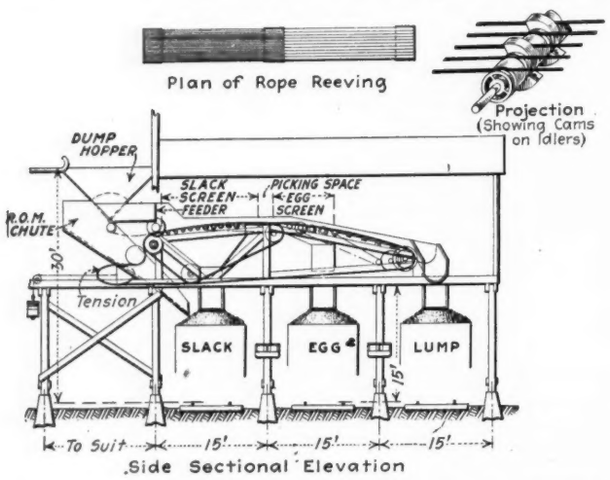


FIG. 3. TIPPLE PROVIDED WITH WIRE ROPE SCREENS

products into this conveyor for delivery with other sizes on either of the outer two tracks.

Compared to the ordinary forms of shaker screen, and even those more recent designs of shakers which have been brought out in the past few years, the Landahl cable screen has marked advantages in three directions—in the tipple structure itself, in cost, and in the minimizing of breakage. Regarding the first, there are two features which immediately appear, one of these being the saving in height. The screen is flat—indeed the tailshaft can be below the headshaft if advisable. This in itself will effect a saving in the size of the structure necessary. Then, again, no matter how carefully balanced a set of shaking screens may be, there is always vibration against which the building must be braced. Any pendulum with an oscillating motion, however smooth, will tend to vibrate its supports, and human ingenuity is not capable of producing two pendulums so accurate as to overcome this tendency when swinging in opposite directions, let alone the approximations which are customary in manufacturing shakers.

I have photographed interiors of many tipples and have often been unable to focus a camera correctly until the screens stopped running. With the Landahl screen this extra strength and rigidity of structure is entirely unnecessary, and any building that will stand up under the dead weight of the loaded screen is as strong as it need be.

The driving mechanism is correspondingly simple. There are no eccentrics or connecting-rods, no balance wheels and none of the elaborate mechanism sometimes seen to insure a forward travel of the coal over the shaker screen. All that is necessary is sufficient gearing to reduce the speed of the motor or engine to the proper speed of the driving sheave, and chain drives therefrom to the stirring rolls to assure their positive action. The only added feature is the tension, and this needs no extra room—it can be placed almost anywhere out of the way.

So far as breakage is concerned, the Landahl screen is nothing more than a smooth-running continuous conveyor and not a series of bumps which make up in the aggregate an intermittent progress. The coal does not drop so much as an inch during the screening or picking process. There are no breaks between upper and lower shaker, or at the point where the lumps fall into the chute or onto the loading boom. At the lower end of the cable screen there is a plate which fits closely up to the head sheave, onto which the lumps slide from the cables and from which they slide onto the loading chute or boom.

On the screen itself there is no breakage arising from lumps sticking in perforations only to be broken by the impact of a bigger lump from behind. The very construction of the screen itself guards against this. There are no edges or ends to the perforations against which the lumps may be crushed.

As to the cost, improved machinery usually is high in first outlay. Careful estimates based on actual expense show that the Landahl screen is at least 10 per cent. lower in first cost than a shaker screen outfit of the same capacity.

The screen here described was developed and patented by E. E. Landahl, who has had many years' experience in tipple design and who is at present assistant chief engineer of the Webster Manufacturing Co., in whose hands Mr. Landahl has placed the manufacture of this new adjunct to tipple equipment.

The volatile matter of bituminous coal would have greater economic value if converted into gas or liquid fuel than if burned under steam boilers. Under present market conditions heat in the form of coal gas brings 8 to 16 times the price of an equivalent amount of heat in the form of coal. Gas is extremely convenient fuel and can be used to advantage for many purposes such as cooking, lighting and heating buildings, municipal lighting, and in some industrial plants for obtaining a uniformly high temperature and clean products of combustion. The residue from the coking coals should find a ready market for house-heating and for steaming purposes. As both the gas and coke burn without smoke, their separate use would tend to make cities cleaner. The manufacture of gas from coal has been a commercial undertaking for many years and is still rapidly developing, the liberal margin between the price of heat in the form of gas and the price of heat in the form of soft coal making the conversion profitable.—*Bureau of Mines Bulletin No. 135.*

Use of Waste Gases for Steam Generation

By J. B. C. KERSHAW
Liverpool, England

THE general utilization of the waste gases from coke ovens and furnaces for steam generation has progressed rapidly in recent years, and had not the war checked development in many industries, still further progress doubtless would have been recorded. In view of the industrial struggles ahead, and the necessity that exists for utilizing our fuel resources to the greatest possible extent, it will be useful to study the progress and records of the past few years, to ascertain what economies are possible with the aid of waste-heat boilers.

THE heat carried away in waste gases may exist either as "sensible heat," that is, heat measurable by the thermometer and due to a failure to extract from the gases the whole of the heat generated by the combustion of the fuel, or as "potential heat," that is, heat represented by chemical energy. This latter is the result of incomplete oxidation of the combustible matter, and of the presence of hydrogen and carbonic oxide in the escaping gases.

In the latter case some form of burner or combustion chamber, with means for regulating the air supply, is necessary. When the waste gases carry only sensible heat, and combustion is completed, the addition of a boiler only is required to save some portion of the wasted energy.

In the earlier installations of waste-heat boilers the natural chimney draft was relied upon to overcome the increased resistance arising from the passage of the gases through the flues of the boiler. In many cases the boiler was erected directly above the furnace, in order to minimize the losses from this cause. This plan was never entirely satisfactory, and in modern installations artificial draft is always employed. In this way the draft of the original apparatus or furnace is increased rather than lessened by the installation of the waste-heat boilers. The use of fans furthermore enables much higher gas velocities to be attained over the water-cooled plates of the boiler, and increases considerably the rate of heat transmission and therefore the efficiency of the whole plant.

TABLE I. CHEMICAL COMPOSITION AND THERMAL VALUE OF WASTE GASES CONTAINING COMBUSTIBLE CONSTITUENTS

Type of Gas:	Per Cent. H	Per Cent. CH_4	Per Cent. CO	Per Cent. C_2H_4	Calorific Value*
Coke-oven gas	49.1	32.6	8.1	3.1	535
Blast-furnace gas	3.5	....	25.4	....	90 to 115

* In British thermal units per cubic foot of gas.

As regards the practical value of waste-heat boilers, it is possible with a modern plant to reduce the heat of the waste gases to 500 deg. F. Any furnace, therefore, which is allowing gases to pass away above this temperature may be provided with the necessary equipment for recovering the wasted heat, although as a general rule such recovery only pays when the gases are carrying 200 deg. F. or more of surplus heat up the chimney.

TABLE II. SENSIBLE HEATS OF WASTE GASES CONTAINING NO COMBUSTIBLE CONSTITUENTS

Type of Gas:	Temperature, Deg. Fahr.
Openhearth steel furnaces	1,100 to 1,300
Reheating furnaces	1,100 to 1,900
Cement kilns	1,300 to 1,800
Copper refining furnaces	1,400 to 2,200

In the United States it is calculated that the utilization of the waste heat from openhearth and other regenerative furnaces in the steel-making plants is equivalent to a saving of 250 lb. of coal per ton of ingots produced, or to an annual saving of two million tons of fuel. Of the total heat delivered to the openhearth furnace, 45 per cent. is wasted in chimney losses. From one half to two thirds of this heat can be recovered by the installation of waste-heat boilers.

Tables I and II show the chemical composition, thermal value and sensible heat of the waste gases from typical iron, steel and other metallurgical furnaces.

The following practical examples of waste-heat utilization for steam generation are drawn from the United Kingdom, Belgium, Germany and the United States; those are selected in which the data of test results are the most reliable and up to date.

Successful Plant in England

The Waste Heat and Gas Electrical Generating Stations, Ltd., was formed in 1907 to promote the use of waste heat for power purposes. This company has developed so satisfactorily, that it now controls nine of the waste-heat power stations running in the South Durham area. According to R. P. Sloan, who contributed a paper on the subject to the meeting of the British Association at Newcastle recently, there were 11 waste-heat power stations operating in the North East coast area. Two of these alone turned out 40,000,000 units of electricity per annum.

The waste-heat stations in the North East coast scheme operate in conjunction with the County of Durham Electrical Power Supply Co., and with the Cleveland and Durham County Electrical Power Co. The area served by these two power companies covers 1400 square miles, and the total power supplied at present is 343,000 hp. The waste-heat stations are placed close to the larger coke-oven and blast-furnace plants, and operate in parallel with the five main stations of the power companies. They are run at their maximum capacity, and all regulation of the power is effected by the main supply stations.

The main distribution and transmission system is three-phase, and the working pressure is 20,000 volts. The power is utilized chiefly in the machine shops and shipbuilding yards situated on the Tyne and Wear, and as the companies have a market for their current many times greater than the output of any individual waste-heat station, it is possible to run these plants continuously at their full capacity and to utilize to the best possible extent the machinery installed in them.

Unfortunately for scientific purposes, no figures have been published (or can be obtained) for the thermal or working efficiency of these North East coast waste-

heat stations, and therefore it is impossible to say how the system adopted compares in practical value and economy with the waste-heat stations situated in other countries. As the most notable and financially successful scheme of waste-heat utilization in the United Kingdom, however, the North East coast developments deserve first mention in any article on the subject.

In 1904 byproduct coke ovens were erected at the coking works attached to the Priestman collieries at Blaydon near Newcastle, and a complete installation of water-tube boilers was added in order to utilize the waste heat of the ovens. At Blaydon there are 90 ovens, and the steam produced from the waste heat is employed to generate electricity in an up-to-date power station, which is worked in coöperation with the Newcastle Electric Supply Co.'s stations.

At Rowlands-Gill there is an installation of 200 beehive ovens and in 1909 nine Stirling water-tube boilers were erected on the main flues which carried the waste gases from the ovens to the chimney. Two Bettington tubular boilers and four Stirling boilers fitted with under-feed stokers were added for the purposes of burning coke breeze and to provide an alternative source of steam power when the ovens were not working.

The electric power station at Rowlands-Gill contains four Westinghouse turbines coupled to three-phase alternators, generating current at 6000 volts for supply to the Newcastle Alloy Co.'s works in the vicinity of the generating station. This company has recently commenced the manufacture of ferrosilicon, ferromolybdenum, ferrochrome and ferrotungsten.

As regards the working efficiency of the Rowlands-Gill boilers, the following are figures given by A. D. Pratt in a paper read before the American Society of Mechanical Engineers (in New York) on Dec. 16, 1916:

Heating surface	1,610 sq.ft.
Gas weight	23,200 lb. per hour
Gas per square foot of heating surface	14.4 lb. per hour
Temperature entering boiler	1,720 deg. F.
Temperature leaving boiler	650 deg. F.
Drop in temperature	1,070 deg. F.
Horsepower developed	187
Approximate rate of heat transfer, per square foot per hour, per degree of temperature difference	4.7 B.t.u.
Draft (natural chimney draft)	0.56 in. of water

The test was made on one of the Stirling boilers rated at 161 hp. and worked in connection with 22 beehive ovens producing coke from an average of 3800 lb. coal per hour, or 173 lb. per oven per hour.

Belgian Waste-Heat Plant

The famous Cockerill Co., of Liege, started experiments in 1909 with the object of utilizing the heat contained in the waste gases from the large gas engines working with blast-furnace gas, the heat in these gases being estimated to amount to 2580 B.t.u. per horsepower-hour. The type of steam generator the engineers of the Cockerill Co. have evolved for the purpose consisted of a horizontal tubular boiler surmounted by a vertical tubular economizer. The gases which left the engine with a temperature of 446 deg. F. entered the boiler and were reduced in the economizer to 230 deg. F., while the water was heated up from 46 deg. F. to 338 deg. F.

The water then passed into the boiler, where it was converted into steam at a pressure of 114 lb. per square inch. Four boilers of this type had been installed by the Cockerill Co. before the war broke out and were developing 5000 hp. Steam was raised in the proportion of 1.93 lb. per electrical horsepower developed by the gas engine, and it was estimated that the boilers recovered 55 per cent. of the heat of the waste gases and increased the thermal efficiency of the gas plant by 13 per cent.

M. Greiner has calculated that with four gas engines of 1500 hp. each the savings effected by the installation of waste-heat boilers would amount to about $18,880 per annum. If it be accepted that a thermal efficiency of 30 per cent. can be obtained in the gas engine, then the addition of a waste-heat recovery apparatus would raise the efficiency of the entire equipment to 35 per cent., or to double that of the best steam plant.

An Illustration from Germany

As usual, most of the German records of trials and tests of waste gases for steam-raising purposes are more scientific and exact in their form than those of other countries. The most important and valuable of the results for comparative purposes are those recorded by Butow and Dobblestein in *Gluckauf*.

The data recorded related to trials with the Wefer patented system of boiler firing (with coke-oven gas), which was designed to secure a better mixture of the combustible gases and air passing into the boiler furnace, as well as to minimize the risks due to backfiring or to explosions in the mixing chamber. In the early types of burners for boilers fired with coke-oven gas, the gases were introduced by simple nozzles, air being supplied through openings in the furnace front. Imperfect mixing of gas and air led to imperfect combustion.

In the Terbeck burner a mixture of gas and air was obtained on the principle of the Bunsen burner, and a secondary air supply was introduced at the combustion point. By the use of this burner the steam output per ton of coal coked rose from 782 to 1320 lb., and the evaporation per square foot of heating surface per hour from 1.475 to 2.92 pounds.

In the Wefer system gas flows from the main into the 25 iron pipes feeding the graphitic burner tubes through a chamber, one end of which is formed by a hinged explosion cap. This uncovers the full section of the chamber in case of backfire and closes automatically when the latter has expended its force. It also affords easy access to the burner tubes. Air is supplied through a ring valve to a separate chamber, whence it flows concentrically with the gas tube for a distance, and is thus thoroughly mixed with the gas before ignition.

An eight-hour test on a double-flue boiler of 1280 sq.ft. heating surface gave the following results (summarized): Steam pressure (gage), 168 lb. per square inch; steam temperature, 592 deg. F.; mean gas pressure, 3.5 in. water; mean gas temperature, 80.6 deg. F.; mean calorific value of gas, 461 B.t.u. per cu.ft.; excess air supply, 1.71; evaporation, from and at 212 deg. F., 286.5 lb. per 1000 cu.ft. of gas; evaporation per square foot of heating surface, 4.47 lb. per hour; thermal efficiency, 79.2 per cent.

Forty-eight Wefer furnaces (in 1912) had been in satisfactory operation at the Victor Pit (Rauxel) for nine months. Assuming a boiler of 1290 sq.ft. of heating surface to yield 18,000 tons of steam during 300 working days, it is shown that the costs per metric ton of steam are: Wages ¾c.; maintenance and cleaning, ½c.; feed water, 1¼c.; interest and depreciation,

2½c.; total, 5c. per ton. This figure may be compared with the average estimate of 32c. per ton of steam in coal-fired installations.

Another series of trials carried out in 1914 with an improved form of the Wefer burner gave the following results, the tests being carried out on a boiler with the two flues fitted with the new burner: Heating surface, 1241 sq.ft.; gas analysis—CO_2, 1.6 per cent.; O, 1.8 per cent.; CO, 4.6 per cent.; H, 52.2 per cent.; CH_4, 28.8 per cent.; heavy hydrocarbons, 1.6 per cent.; N, 9.4 per cent.; mean calorific value, 428 B.t.u. per cubic foot; gas pressure, 5.8 in. water, barometer, 29.7 in.; flue gas analysis—CO_2, 8.30 per cent.; O, 3.24 per cent.; CO, nil; excess air ratio, 1.16; furnace temperature, 2560 deg. F.; steam pressure, 176 lb.; steam temperature, 567 deg. F. at the superheater; evaporation, 7219 lb. steam per hour; gas consumption, 24,854 cu.ft. per hour or 291 lb. per 1000 cu.ft. of gas, and 5.81 lb. steam per square foot of heating-surface per hour. The thermal efficiency, including superheat, amounted to 84.6 per cent. Loss by conduction and radiation was 15.4 per cent. Comparison with the earlier test data shows a net gain of 3.4 per cent. in thermal efficiency, despite the increase in evaporation from 4.47 lb. per square foot to 5.81 pounds.

In the improved Wefer burners used for these tests, the coke-oven gases flow from the gas chamber through 40 distributing tubes and are delivered about two thirds the distance along tunnels in the graphite burner block. The use of 40 distributing tubes in place of the 25 of the earlier burner secures a better mixture of the gas and air. The latter is admitted through a ring valve and flows concentrically with the gas tubes to the mixing chamber at the burner head. The original form of Wefer burner extended into the flue of the boiler for a distance of 2 ft., but the improved form is built onto a tubular extension of the furnace front, and thus the whole length of the flue of the boiler is available for heat transfer.

Provision is Made for Backfires

To provide for backfiring and explosions a central tube 8 in. in diameter is inserted in the burner, with a simple explosion valve on its outer end. The combustion chamber is lined with firebrick, and in order to promote more perfect combustion of the gases a perforated plate and a bank of short tubes of fireclay are mounted in the flue of the boiler. At the Victor pit, where these trials of the Wefer burner have been carried out, a gasometer with a capacity of 1,400,000 cu.ft. has been erected in order to secure a steady pressure of gas at the burners. As the gas is now being stripped of all its benzol in a byproduct recovery plant, the thermal value of the gas is not so high as it was at the time of the tests.

In comparison with the foregoing tests of the Wefer burner, figures given by Ortmann in the August, 1913, issue of *Stahl und Eisen*, covering the results of tests made with blast-furnace and coke-oven gases, may be quoted. The boiler used for blast-furnace gas had 968 sq.ft. of heating surface and was provided with an economizer. The thermal efficiencies in three separate tests were 79.4, 76.8 and 82.7 per cent., giving a mean of 79.6 per cent. The other boiler had a heating surface of 925 sq.ft. and showed in two separate tests efficiencies of 74.9 and 80.2 per cent. when fired with coke-oven gas, the mean in this case being 77.5 per cent. The calorific value of the gases and other details are not available in this case, so it is impossible to say whether the burner used was as efficient as the Wefer burner or otherwise.

Waste-Heat Utilization in America

A large amount of practical work upon the subject of waste-heat utilization has been carried out in America and in a paper presented at the 1916 annual meeting of the American Society of Mechanical Engineers, A. D. Pratt gives a review and summary of what has been achieved in connection with this problem.

The design and operation of boilers for utilizing the waste heat of openhearth steel furnaces, cement kilns, copper furnaces, beehive coke ovens, and heating furnaces generally, are discussed in this paper. From it the following particulars are abstracted concerning the waste-heat installation at the plants of the H. C. Frick Coke Co. at York Run, Penn., and of the Indiana Steel Co. at Gary, Indiana.

At York Run, 50 beehive coke ovens were connected to three Stirling boilers provided with standard type of baffles and 3600 sq.ft. of heating surface each. The test extended over a full week's run of 168 hours with an average of 44 ovens in service, coking coal at the rate of 13,800 lb. per hour, or 314 lb. per oven per hour. The weights of gas and temperatures varied considerably during the week, the lowest temperature noted being 1500 deg. F. and the highest 2075 deg. F. The exit temperatures varied from 475 deg. F. to 550 deg. F. and averaged 490 deg. F.

The gas consumed in this test, expressed as pounds per hour, was 83,650, and expressed as pounds per hour per square foot of heating surface, was 7.7. The drop in temperature of the gases in passing through the boilers was 1314 deg. F., and the horsepower developed amounted to 824, or 76 per cent. of the rated capacity of the boilers. The approximate rate of heat transfer was 3.2 B.t.u. per square foot per hour per degree of temperature difference.

The foregoing represents the results obtained with an early installation of boilers for utilizing the waste gases from beehive ovens. Later installations in the United States have shown considerable improvement upon these results.

At a more modern plant, provided with a specially designed Babcock & Wilcox boiler, 18 sections wide, each section made up of 26 twenty-foot tubes, and thus providing 10,200 sq.ft. of heating surface, the draft is furnished by a turbine-driven induced-draft fan, and a much higher rate of heat transfer is obtained, due to the greater speed at which the gases are passed through the boiler. The results of two tests with this boiler were as follows:

	No. 1	No. 2
Gas consumed, pounds per hour	125,500	155,100
Gas per square foot of heating surface per hour	12.2 lb.	15.2 lb.
Temperatures:		
Inlet to boilers	2,329 deg. F.	2,158 deg. F.
Exit from boilers	463 deg. F.	477 deg. F.
Drop in temperature	1,866 deg. F.	1,681 deg. F.
Power developed	1,750 hp.	1,956 hp.
Per cent. of rated capacity of boiler	172	192
Approximate rate of heat transfer *	5.6	6.8

* Expressed as B.t.u. per square foot per hour per degree of temperature difference.

The performance of this first boiler has been so satisfactory that six additional units have been ordered by

the owners of this coking plant, the only difference being that there are 27 sections instead of 18, and that each boiler possesses 15,300 sq.ft. of heating surface, equivalent to a capacity of 9180 hp. for the six units.

The utilization of the waste heat from openhearth steel furnaces has been practiced for many years in the United States, and according to Mr. Pratt (see paper previously quoted) there are already installed, or on order, boilers capable of producing 90,000 hp. from this type of waste heat alone. These boilers are connected to 190 openhearth furnaces which produce annually over nine million tons of steel. Experience has shown that through the use of these waste-heat boilers the net cost of production is reduced by 20 to 25c. per ton, and that a total economy of $1,840,000 is earned on the foregoing output of steel. The fear that the installation of waste-heat boilers, with their fans and other accessories, would cut down the production of the openhearth steel furnace has proved groundless, for the figures show that the improved draft resulting from the use of fans leads to a reduction in the time required for the separate heats and increases the tonnage capacity of the furnace.

The installation of waste-heat steam generators at the Gary works of the Indiana Steel Co. consists of 28 special six-drum Rust-type of boilers, equipped with special cross-baffles, in order to give the desired gas velocities over the heating surfaces. Each boiler has a heating surface of 4880 sq.ft., and the one to which the following test relates developed 393 hp., or 80.6 per cent. of its rated capacity.

Gas weight, per hour	83,434 lb.
Gas per square foot of heating surface per hour	17.1 lb.
Temperatures:	
Entering boiler	1,155 deg. F.
Leaving boiler	530 deg. F.
Drop in temperature	625 deg. F.
Draft at boiler inlet	1.47 in. water
Draft at boiler damper	3.95 in. water
Loss in draft	2.48 in. water
Approximate rate of heat transfer, square foot per hour per degree of temperature difference	6.92 B.t.u.

Philippine Coal Fields Develop Slowly

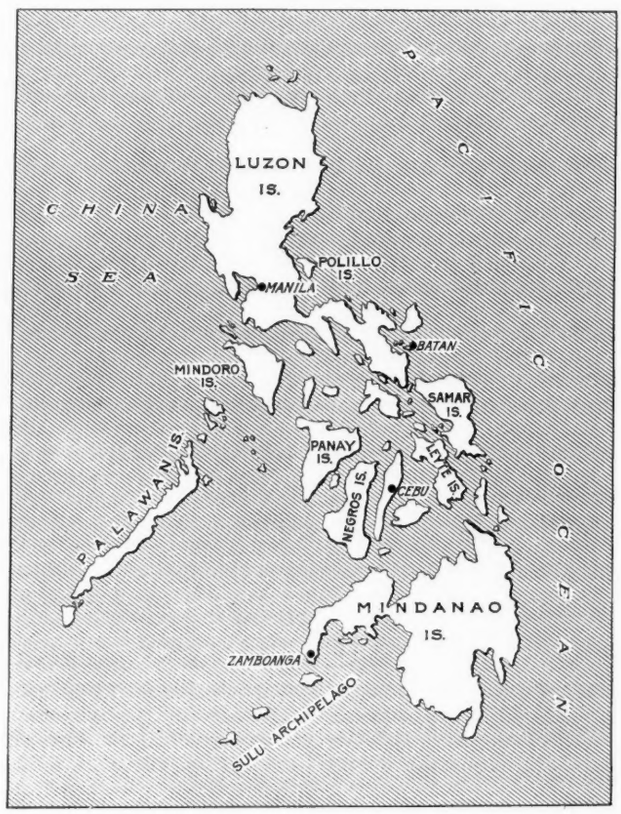
From the *Consular Reports* the following notes on the Philippine coal fields are taken, a map being added so as to enable the reader to locate the points mentioned:

"C. H. French, the new manager of the National Coal Co., has just returned from a tour of inspection of the company's property near Zamboanga and gives a favorable report. The company is not yet turning out any coal, but has finished the preliminary survey of the field and expects to be prepared in six months to put out coal in a small way pending the adequate development of the project. The preliminary output will probably not exceed 100 tons per day.

"The Sibuguey Peninsula, on which the National Coal Co.'s fields are located, contains approximately 100 square miles, all of which appears to be well underlaid with coal. The company is devoting its attention at present to an area about 10 miles square, which is especially rich in deposits. Of this tract some 4 square miles are fairly well located for immediate development work. This portion of the tract lies near the small Sibuguey River that is navigable eight or nine months of the year and will supply transportation facilities to Taba Bay pending the construction of the necessary railroads. [Sibuguey River and Peninsula and Taba Bay do not appear in modern atlases.—Editor.]

"It is the intention of the company's management to open up this tract provisionally and to get out as much coal as possible for immediate local needs while the more systematic development work is going forward. Under the present transportation conditions it will be impossible for some time to get the necessary trackage and rolling stock for the railways, and the same will be true of much other modern machinery required. Meanwhile, however, a considerable amount of coal may be taken out near the river and transported to ocean-going ships.

"The preliminary survey of this field shows the presence of considerable anthracite on the northern end of the coal-bearing tract. One vein of this, 13 ft. thick, has been uncovered sufficiently to show an extensive deposit. No attempt will be made to exploit the anthracite at present, as the islands are not prepared to use this class of fuel.



MAP OF PHILIPPINE ISLANDS

"Near the middle of the tract a 6-ft. vein of good bituminous coal has been found. Tests have shown the product of this vein to be good coking coal, considerably above the standard required of Japanese coal in this market. Another vein of noncoking coal has been located and explored to a considerable extent. The coal from this is of good quality and compares favorably with the Japanese product consumed in the islands. Two private operators are turning out coal on the island of Cebu. The Uling Co., whose mine is

situated south of the city of Cebu, and the Banao Co., whose plant is to the north of Cebu, claim to be turning out about 30 tons each per day. Their average output is probably considerably less than this amount at present. Their product is said to be of good quality, and they have no difficulty in selling all they can produce. The deposits at these places are said to be extensive. No data are available on which full reliance may be placed, as no official surveys have been made.

"On the island of Batan (not to be confused with the Province of Bataan on the island of Luzon), the Betts Coal Co. is turning out an average of 10 tons a day. All of this output is being consumed by the Legaspi line of the Manila R.R. No complaint as to the quality of the coal is made by the railroad, but the amount produced is not sufficient to meet the needs of the line.

"For the purpose of beginning operations as soon as possible the National Coal Co. has recently purchased some equipment from the Manila R. R. Co., including some engines, boilers, tackle and pumps. The company's engineer has recently resigned, and operations will be temporarily suspended pending the employment of another man with coal-mining experience. Such a man does not appear to be available in the islands at present, and it may be necessary for the company to send to the United States for him."

A Neglected Coal Field in West Virginia

THE recent increased demand for so-called smokeless coal has led to new investigations for such coal in fields along the eastern margin of the great Appalachian coal field, and particularly in the regions nearest tidewater. One of these, known as the Abram Creek-Stony River coal field, in Grant, Mineral, and Tucker Counties, West Virginia, has recently been examined by geologists of the United States Geological Survey, Department of the Interior, which makes public the following statement:

The fields examined include the southeastern prong of the southern extension of the famous Georges Creek field of Maryland. The southwestern prong extends up the North Fork of Potomac River and over into the headwaters of Cheat River. At the north end of the Georges Creek field there is a single basin, the axis of which nearly follows Georges Creek across Maryland from Wellersburg, Penn. This axis passes a little east to the North Fork of the Potomac almost to Elk Garden, where it swings farther eastward and follows Abram Creek up to its head and thence passes southward a little east of the upper waters of Stony River across the divide into the basin of Red Creek, in Tucker County. The basin ends a few miles south of the South Fork of Red Creek. The southeastern and southwestern extensions of the fields are separated by the Canaan Valley anticline, which follows Canaan Valley northward nearly to the Falls of Stony River, then turns northwestward, crossing the North Fork of the Potomac not far from Stoyer. The northern part of Georges Creek-Elk Garden basin as far south as Emoryville is well known, but almost nothing has been published about the southern part. Around Elk Garden there are the remnants of the Pittsburgh coal, which in that region has a thickness of 12 ft. or more. This bed occupies only the hilltops and is now nearly worked out. Most of the present mining on it is done with steam shovels on the outcrop coal. Below the Pittsburgh, however, lie three beds that are widely minable in the area considered—the Barton bed, almost 400 ft. below the Pittsburgh; the Thomas bed, nearly 200 ft. lower; and the Davis bed, nearly 200 ft. below that.

As the recent field work has shown that the correlations of the coals given in the Survey's Piedmont geologic folio, published in 1896, are in many areas erroneous, and that the structure mapped in that folio does not quite agree with the structure as now determined, the following statement is made pending a more detailed report and map.

The Barton, Thomas and Davis beds crop out at the mouth of Abram Creek at Harrison, but between Harrison and Emoryville the Thomas and Davis beds pass below drainage level. From Emoryville to the Mount Storm-Petersburg road the Barton coal keeps a short distance above drainage level, and the other two beds lie below drainage level all along Abram Creek. The Thomas and Davis beds rise above drainage level near Bismarck. All the coals lie above drainage level at the mouth of Stony River, but the Davis coal goes below the level of Stony River about 3 miles from its mouth and the Thomas coal comes down to river level at the big bend north of Mount Storm. South of the Northwest Turnpike the Thomas coal is about at the level of the river, but it rises above the river still farther south, and about 3 miles below the Northwest Turnpike crossing of Stony River the Davis bed also rises above the river and continues to a point about three-quarters of a mile above the falls, where it again goes under. The Thomas bed keeps well above the river from the Northwest Turnpike to the mouth of Stingley Run, where it is just above the level of the river. From there southward all the coals rise, so that the Davis coal is above the river level a short distance above the mouth of Helmet Run. All the coals underlie the divide between Stony River and Red Creek and crop out in the upland divides between the branches of Red Creek. This basin is fairly flat, but its edge is sharply upturned on the east and less sharply upturned on the west.

The two upper beds, the Barton and Thomas, are similar in having usually one bench of clean coal, from 20 to 40 in. thick, overlain by a bench of mixed bony and good coal. The Barton coal differs, however, in having a parting near the bottom of this main bench of coal, and the coal below that parting is poorer than the rest of the bench. The Davis coal is generally much thicker, reaching in places a thickness of 9 ft., and there is usually a principal shale parting near the middle or above the middle and minor shale or bony partings in the two benches above and below the main parting. The Barton and Thomas beds will yield about 2½ ft. of coal and the Davis bed from 3 to 6 ft., the thickness depending on the number of smaller benches taken.

The coal of this field is much nearer tidewater than the so-called smokeless coals of Somerset, Cambria or Clearfield Counties, Pennsylvania, or the New River or Pocahontas coals of West Virginia. On the other hand, it is not generally as thick, or, if as thick, it is more broken up by partings than the smokeless coals of the regions mentioned. On this account it will be more difficult to mine and greater care will be necessary to obtain high-grade fuel. Furthermore, the average of many anaylses of the coal indicates that it contains a larger percentage of both ash and sulphur than either the New River or Pocahontas coals and more than that in most of the coals now mined north of this field.

The following estimates of the coal content of the three principal beds are based on the correlation of the beds made in recent field work: Assuming a recovery of 1200 tons per acre-foot, the Barton coal bed, with an estimated recoverable thickness of 30 in. and an available area of 19,200 acres, will produce 57,600,000 tons; the Thomas bed, with an estimated recoverable thickness of 30 in. and an available area of 45,880 acres, will produce 137,640,000 tons; and the Davis bed, with an estimated recoverable thickness of 36 in. and an available area of 63,200 acres, will produce 227,520,000 tons—a total of 422,760,000 tons.

NEW APPARATUS AND EQUIPMENT

New Mining Machine

The Brantley Coal Mining Machine Co., of Sand Springs, Okla., has placed upon the market the Brantley coal cutter. This machine, shown in the accompanying illustration, is claimed by the inventor to possess all the advantages of both the longwall and shortwall machines, as well as some others all its own.

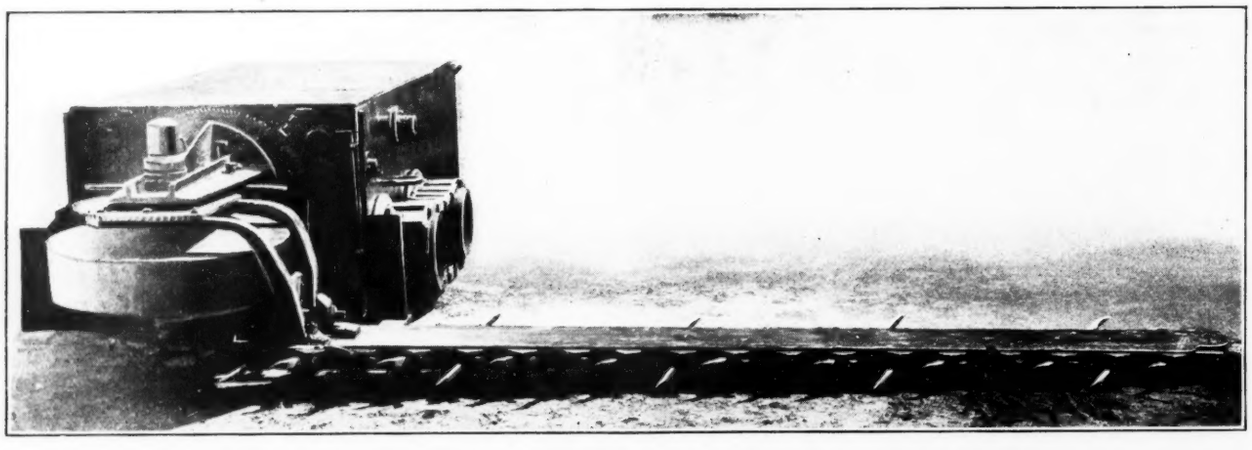
As may be seen in the illustration, the machine consists of an electrically operated mechanism driving a chain carrying pick cutters. The cutter bar, which may vary in length from 5 to 10 ft., may be swung in all directions and will cut at any angle to the body of the machine. Thus any kind of a cut desired may be made.

The truck upon which the coal cutter travels is made integral with the body of the machine, since due to the universal movement of the cutter bar there is no necessity for removing the machine from its truck. Propulsion is secured by means of a combination of track wheels and caterpillar chain. The machine will thus travel either upon rails or upon the floor of the mine.

The body of the machine is 6 ft. long, the height over all is 28 in. and the track gage is 36 in. The height of the kerf is 4 in., and timbers may be set within 4 ft. of the face. This coal cutter has three cutting and three traversing or traveling speeds. The cutting speeds vary from 2½ to 4 ft. per minute, while the traveling speeds range from 2½ ft. per minute to 4 miles per hour.

The arrangement of the propelling device is such that the machine may be made to turn itself around as if it were on a pivot. It will cross or leave the track at any desired point regardless of the position of switches. It may thus be used to advantage for driving either rooms or headings, air courses or breakthroughs.

The inventor of this machine has also developed a device for loading the coal onto mine cars as fast as it is cut by the machine. It is claimed that the coal cutter will mine coal as rapidly as 12 men could mine it with picks. If the loader will place this coal in a car as fast as the cutter will undercut it, it would appear that the combination of the two would do much to relieve the present shortage of labor in the coal mines.



MANY ADVANTAGES ARE CLAIMED FOR THIS NEW COAL-CUTTING MACHINE

Michaelsen Briquetting Machine

BY L. KLEBBA
Minneapolis, Minn.

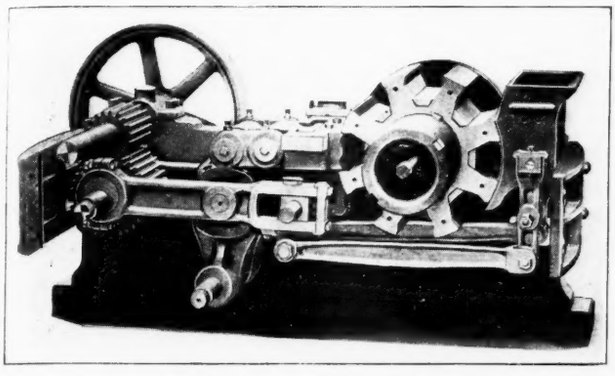
A new briquetting machine has been designed and patented by Private William P. Michaelsen, Co. C, 326th Field Signal Battalion of the United States Army. This machine is designed to press either granular or fibrous materials such as peat, lignite, coal dust, sawdust and the like into bricks or briquets suitable for fuel. In this process the machine differs considerably from others built for the same purpose.

As may be seen in the accompanying illustration, the machine consists of a revolving "cylinder" containing eight molds. This at one side revolves past a feed hopper from which each mold in succession receives a charge of the material to be briquetted. The cylinder is revolved by a succession of steps, each movement bringing one chamber or mold in front of the compressing plunger. This plunger then makes its stroke, compressing the contents of the mold in front of it into a briquet.

The bottom of each mold contains a movable piece carrying a plunger. When the chamber reaches its lowest position this plunger is acted upon by a cam inside the cylinder. The cam forces the bottom of the mold outward, pushing the pressed briquet loose from the walls of the mold. Upon a further movement of the cylinder the ejector plate is returned quickly to the bot-

tom of the mold by the action of a spring on the pin after this pin has been released by the cam. The briquet is thus ejected from the mold.

As may be seen, the feed hopper or block is made heavy and has a movement exactly opposite to that of the compressing plunger, so that the force of the

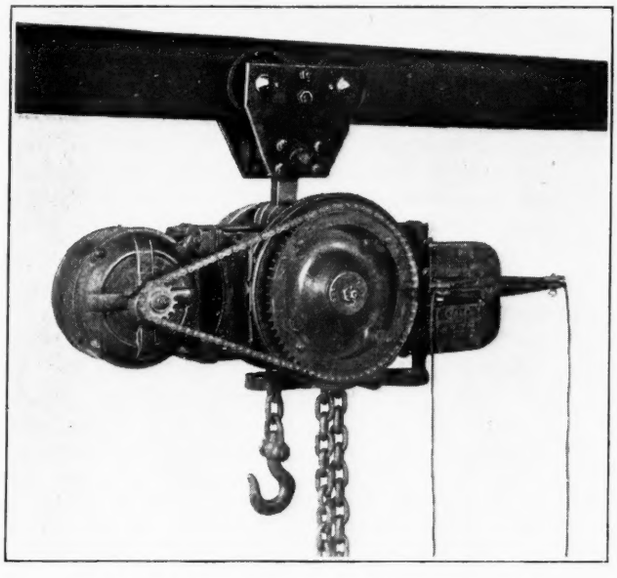


MICHAELSON BRIQUETTING MACHINE

plunger pressure is resisted not alone by the cylinder shaft but by an opposite pressure from the feed block as well. Any suitable means such a a chute or a conveyor may be employed to feed the material to be pressed to the machine. In like manner similar means may be utilized to remove the finished briquets from it. It would appear that this machine would find its greatest application in making large briquets of soft or fibrous material such as sawdust or peat.

Small Electric Hoists

Small electric hoists that are adapted to almost every kind of work involving hoisting form an economical means of handling loads of from ½ ton to 5 tons. These



SMALL ELECTRIC HOIST FOR GENERAL USE

machines can lift with from 5 to 10 times the speed of a hand-operated chain hoist, and their cost is but a fraction of that of an electric traveling crane. They can be suspended from a fixed point, shear-pole, jib-crane trolley running along an overhead track, or small traveling crane. The trolley or crane when used can either be pulled along by hand or operated by means of a motor.

These little hoists are controlled from the floor by means of pendant ropes. A brake, which is automatically applied when the controller is returned to the off position, holds the load suspended, and a safety switch automatically cuts off the current when the hook reaches its safe limits of travel.

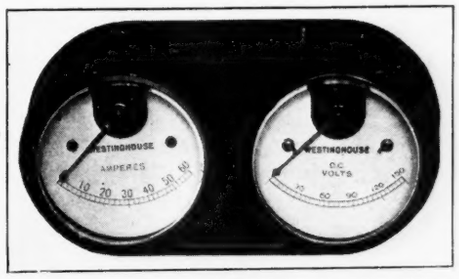
Special mechanical and electric features are employed in the construction of the motors to suit the service. The direct-current motors are modifications of the series-wound crane type. The alternating-current motors are of the polyphase squirrel-cage type with high torque, rotor windings. Motors of ¾ hp. are used for ½-ton hoists and 7-hp. motors for 5-ton hoists, the ratings being figured on a 30-min. basis.

The controllers of the drum type are designed to break heavy currents without burning the contacts. When the tension on the control ropes is released a spring returns the controller to the off position.

The hoist illustrated is built by the Yale & Towne Manufacturing Co., and equipped with Westinghouse electric apparatus.

New Duplex Instruments

The Westinghouse Electric and Manufacturing Co., of East Pittsburgh, Penn., has recently placed upon the market two new duplex instruments for battery charging, marine, dental, telegraph, telephone, farm lighting and other compact instrument panels where direct cur-



INSTRUMENTS MOUNTED IN METAL CASE

rent is involved. These duplex instruments consist of any two standard Westinghouse type AW or type FW instruments desired, mounted in an attractive dull-black metal case. The type AW instruments have round open faces, 3 in. in diameter, with glass cover and rear mounting studs; the type FW have 5-in. faces.

During the past 15 or 20 years considerable attention has been given to designing of furnaces that would burn bituminous coals without producing smoke. Campaigns have been conducted to educate the fireman and induce him to use proper methods of firing the coal so as to produce the least amount of smoke. Large cities passed smoke ordinances aiming to reduce the smoke by encouraging or forcing the coal user to install apparatus that would burn coal smokelessly. These methods of attacking the problem have had much success but the production of unnecessary smoke continues. A large part of this smoke is made in a way that can not be easily controlled, even with good intentions on the part of the offenders.—*Bureau of Mines Bulletin No. 135.*

Anthracite Mine-Cave Situation

FOR many years the people living in the anthracite region have been keenly alive to the necessity of obtaining some compensation for those whose surface property has been destroyed by mining operations. Similar controversies have existed in most of the important coal states and, in fact, wherever mining has been carried on under valuable surface holdings, either farmland or property otherwise improved. The solution of the Scranton mine-cave problem has, therefore, more than local interest. Problems of like character confront more or less the whole anthracite field, and the methods proposed and adopted in that region may be applicable wholly or in part to other sections of the country.

IN THE early days of the City of Scranton prominent members of the Scranton family acquired large holdings where the present City of Scranton now stands. A part of this property, that on the mountain to the southeast, contained iron ore. This fact and the abundance of coal in the region caused the Scrantons to organize the Lackawanna Iron and Coal Co. In 1841 the first furnace of this company was fired, and while the local ores proved a total failure, the project greatly encouraged the anthracite industry in the vicinity and had much to do with the early development of Scranton.

In 1851, to bring supplies to the furnaces and mills and to ship products out to markets, railroads were built extending east and west from Scranton. This was the beginning of the Delaware, Lackawanna & Western R.R. It was in these early days of the coal industry that the Scrantons began to dispose of some of their surface rights. It is stated that at first purchasers of land were given deeds in which merely the mineral was reserved. After a limited number of such transfers were made this form was discontinued; the next deeds reserved the mineral and also the right to mine it. This form was again soon modified so as to reserve to the mine owner the right to mine out all coal beneath the surface in question without liability for any damage which might result therefrom. This reservation has been held by the supreme court of the state to be valid. It is said that most of the deeds of sales for Scranton property are written with this latter clause, which waives for the grantee the right of surface support.

Area in Which Coal May Not Be Mined

In early transfers of property a tract was set aside for the business center of the city. No coal can ever be mined under six blocks to the east of the river. Thus the safety of the big office buildings of the city is assured. The original streets also were protected similarly, but those opened up later were not. Furthermore, in case of damage to their property the public-service corporations do not have any recourse in the wording of the original deeds.

As mining progressed in the different regions of the anthracite field and the workings became more extensive, difficulties with owners of surface property increased proportionately. Matters finally reached such a stage that a commission was appointed by Governor Tener during the legislative session of 1911 to investigate and report on the whole matter. This commission was made up of men prominently connected with the mining and engineering professions; it held many sessions in different parts of the anthracite field and made its report in March, 1913. The anthracite press commenting on this report at the time stated that in its opinion the commission had found a solution of the difficult mine-cave problem, at once prompt and effective as well as equitable to all the parties concerned.

That solution rested on certain voluntary, yet substantial, concessions which the principal mining companies of the anthracite coal region declared themselves willing to make to the surface property holders. They were willing to pay at least 50 per cent. of all the injuries suffered by structures in the progress of mining, where such structures are of a value of $5000 or less. This concession, conservative as it seems, was regarded as being liberal, for the assessment books of Scranton showed that more than 90 per cent. of the structures of the city were assessed at less than that amount and would be entitled to the compensation offered. The owners of structures exceeding $5000 in value were privileged to buy sufficient pillar coal for support of their premises at a rate not to exceed 25 per cent. above the prevailing royalty value at the time of purchase. This meant about 35c. a ton for pillar coal. It was also provided that the mining companies would erect artificial supports in the mines if the surface owners so desired—the expense of the work, however, to be borne by the surface owner. In case any disagreements were to arise between the interested parties, provision was made to refer the matter to a board of three commissioners. This agreement was signed by the presidents of the several companies which controlled more than 90 per cent. of the coal operations in the anthracite field.

During the years following this report much legislation was attempted in which politics played a prominent part; in fact the mine-cave situation was made the football of politicians. In the Scranton municipal election last year it was again a prominent issue. After the present mayor, A. T. Connell, was elected matters were taken up in earnest and the proposition referred to later in this article was put in shape. On July 22, 1918, the anthracite concerns operating mines under Scranton and Dunmore made a proposal to the people of Scranton through the Mine-Cave Committee of the Civic Bureau of the Scranton Board of Trade. On July 24, 1918, that body addressed the following communication to the authority by which it was appointed:

At a meeting of this body, held June 25, 1917, a resolution was passed authorizing the chair to appoint a committee of five for the purpose of meeting representatives of the anthracite coal companies operating in this vicinity, the purpose being to determine whether some practical arrangement could be reached which would relieve the surface owners and residents of the community to a large degree from the fear and distress arising from the fact that mine caves were occurring from time to time in certain parts of the city. During the past 13 months the committee has held 29 stated meetings and numerous informal conferences, most of them in this city, with several in New York. After your committee had held several meetings a joint conference was held in the Board of Trade rooms in this city. At

this conference the members of the committee carefully outlined to the anthracite operators the so-called "mine-cave problem" as it appeared to them, and suggested that it might possibly be approached from two different angles. First—either a special arrangement or contract could be made between each particular town or city affected and the companies operating in that community; or second—a comprehensive plan could be outlined which would apply to the problem wherever it occurred throughout the coal fields and one to which the anthracite interests and all the inhabitants of the entire region, and possibly the Commonwealth of Pennsylvania, also might be parties.

Much time was devoted at this conference to analyzing the advantages and disadvantages of the two plans suggested. The operators directed the attention of the committee to an announcement published in the Scranton papers on June 23, 1917, whereby the coal companies subscribing agreed to do certain things voluntarily and requested that the committee state in what respects this proposition was not satisfactory to them. The attitude of the operators at this meeting indicated very clearly that the voluntary agreement was the only plan they could see their way clear to seriously consider, and this impression was confirmed in subsequent meetings. On Monday, July 22, 1918, your committee received from the operators a voluntary offer or agreement, duly signed, and this we are prepared to announce for your consideration.

After submitting their proposal, the representative of the operators offered an explanatory letter, addressing it to the chairman of the Mine-Cave Committee of the Civic Bureau. Extracts from this letter follow:

In accordance with your request, I inclose herewith our proposal, duly executed by all of the companies who have been represented by our committee. If the same be acceptable to your committee, we will prepare and submit to you a proposed form of contract between the commission to be appointed and the coal companies, binding them legally to the terms of the within proposal, which we will forthwith put into effect. As to schools, our position has been that there is no reason why we should bear the whole burden of their protection. In Commonwealth vs. Citizens Coal Co., 256 Pennsylvania, at page 331, it is held that the school boards have the right to condemn the coal necessary for the support of the schools, and they also may purchase the same under the plan proposed, at a price to be fixed by the commission. In all cases where the school boards act, either by instituting condemnation proceedings or by filing an application before the commission, we will immediately discontinue all mining which might endanger the safety of school buildings, pending the determination of the questions of what support should be provided and the cost thereof. We, as taxpayers, will pay some 20 per cent. of all such awards. Our committee is unanimously of the opinion that this burden can be, and should be, fairly borne by taxation. Notwithstanding all we have read and heard of sentiments to the contrary, we have faith in the sense of fairness of the citizens of Scranton, and that they appreciate the difficulties and mutual obligations relating to the mine-cave problem. We believe the plan proposed will be reasonably acceptable to them and, with such modifications as experience may prove to be helpful, a permanent and satisfactory solution.

The proposal referred to follows:

At the request of the Pennsylvania Anthracite Mine-Cave Commission, a voluntary undertaking was made by various mining companies under date of Feb. 19, 1913, which was supplemented by a public announcement made June 19, 1917. As the result of numerous conferences with your committee, we have offered not only to bind our respective companies substantially to the obligations named in the foregoing, but to assume additional burdens as stated in our communication to your committee of Apr. 4, 1918. You now ask us to formally restate these offers in a written proposal.

The committee representing the coal-operating companies of the City of Scranton who signed such communication of Apr. 4, therefore, hereby submit the following proposal as a present adjustment of the mine-cave problem.

A large part of the surface upon which buildings have been constructed in the City of Scranton has been granted by deeds which expressly reserved the right to mine the coal thereunder without liability for surface damage. The legality of such reservations has been repeatedly upheld by the courts. In the development of the coal-mining industry the mining companies either constructed themselves or permitted the construction of homes for the workmen engaged therein, upon the surface over the mines, reserving, however, the right to remove all the coal when in the orderly process of mining the same became necessary. To the extent that they encouraged or permitted such construction a moral obligation may be attributed to them either to maintain such homes or to provide others. They are also very largely interested in the prosperity of the City of Scranton. Upon these grounds they have been and are disposed to voluntarily accept certain specific obligations.

On the other hand, it is essential to their continued existence that they be permitted to mine substantially all their coal. Indeed, such obligation has been, in many leases, legally assumed. Efforts have been made to obtain legislation which, if upheld by the courts, would have seriously interfered with mining operations, would have restricted the extent of the coal they might mine, to the detriment of the anthracite communities and the consuming public, and which even sought to penalize both the companies and their employees. The advocates of such legislation have been the very persons who have accepted the restricted deeds and who have sought to thereby obtain rights which they were not in law entitled to. The disastrous results which might ensue not only to the industry, but the City of Scranton, were not considered. It may not be generally known that the wages paid by the coal companies engaged in Scranton in the production of coal amount yearly to more than $15,000,000, a sum in excess of the aggregate of all other wages paid for all other work in that city.

Welcomed Appointment of Committee

We have, therefore, welcomed the appointment of your committee by the Board of Trade. We believe that our interests are altogether mutual, and that it is most advisable that some plan be adopted immediately, even though it does not fully measure up to your views of our obligations. You will appreciate that any legal obligation voluntarily assumed by us involving serious additional pecuniary burdens must be conditioned upon our freedom to exercise our present legal rights to mine our coal. We have, therefore, repeatedly stated and again advise that this proposal shall remain in effect so long and so far as the exercise of our rights to mine coal are not restrained, restricted or penalized by the passage or enforcement of state laws, municipal ordinances or court decisions. This does not mean that we will withdraw our proposal because of individual litigation which does not result in a general and material restriction of our rights to mine coal or because of efforts which may be made to obtain legislation.

With this preface, we propose: First, A commission of three shall be appointed by agreement of our committees, the salaries and all expense of which shall be borne by us. In case of any vacancy in the commission the same shall be filled by like agreement between the committees to be appointed by us and by the Board of Trade. It shall be the duty of the commission to coöperate with us and with the public both to prevent accidents which might result in personal injury and to minimize damage to property. Its members will be expected to become familiar with mining conditions and to be able to give expert advice to the people, the school boards and city officials. The commission will also be charged with the duty of determining, as between the different companies, the responsibility for surface damage; the value of structures damaged; whether the same have been satisfactorily repaired by the companies, or, if the owner desires to do his own repairs, what compensation should be made to him therefor. It will also be given jurisdiction to determine similar questions in the event of damage to streets. If it determines that pillar coal should

be sold for support it will finally determine such a valuation of the same as shall fully compensate the coal company therefor. It shall be vested with jurisdiction upon the application of an owner or lessee of property who desires to build a dwelling, after a hearing upon notice to any mining company owning or having any interest in the coal under the surface upon which such dwelling is proposed to be constructed, to certify in writing that the surface upon which such building is proposed to be constructed is reasonably safe with respect to the danger of surface subsidence within a period of 20 years thereafter. It will be expected to adjust any disputed questions which may arise between the companies and the owners of property. It will also have the custody and expenditure of the fund hereinafter provided for. A written contract shall be entered into between the commission and the coal companies, which shall be approved by your committee, and which shall expressly vest in it the powers above outlined, together with the right to enforce by suit against one or more of us the obligations we assume in this proposal.

Second, As to public highways and city streets. The principle of conservation of the coal under such highways and streets for market purposes is to be accepted where no serious public injury will result. The companies are to provide for the security and convenience of the public by giving proper notice of proposed mining under streets which may affect the surface by providing temporary ways of passage, and by repairing at their own expense any and all damage to streets or municipal structures therein. The companies are to be bound absolutely to promptly restore all streets to as good condition as before any damage except as to structures of individuals or private corporations therein or thereunder, and to indemnify the city against liability. Subject to the foregoing any and all disputes which may arise in connection with the mining of coal under public highways and city streets are to be finally determined by the commission.

Would Restore Buildings Valued Less Than $5000

Third, In case of damage to existing buildings or to dwellings occupied as homes constructed within the next 20 years at locations certified as reasonably safe by the commission as hereinbefore stated within the City of Scranton as now defined or within the present limits of the Borough of Dunmore (except those of mining or railroad companies) of the value of $5000 or less caused by mine caves, we will bear the entire cost of repairing or restoring the same to as good condition as before. The commission shall be empowered to enfore this obligation.

Fourth, We will provide a fund of $100,000 in cash, Liberty Bonds or other trust securities, with a trust company or companies of the City of Scranton, the income and principal of which shall be expended on orders of the commission to compensate for damage or to pay for the repairs to existing buildings in Scranton and Dunmore as aforesaid, of the value of $5000 or less, in cases where they are damaged by mine caves and where the responsibility therefor cannot be determined, or where it rests with a company which has no successors and has gone out of business or become insolvent. (We must here except damage caused by the Delaware & Hudson Co. or its successors.) Where damage is caused by one of us it is severally and not jointly assumed. We will guarantee the maintenance of such fund to the amount of $100,000 for the entire period of 20 years from this date (July 8, 1918), so that such amount shall be intact at the expiration of 20 years to cover any damage thereafter incurred, or for such other proper purpose as the commission with the approval of the board may direct.

Fifth, Where there is danger of surface subsidence and of resulting damage to a structure exceeding $5000 in value and the owner thereof desires to obtain either artificial support or to purchase pillar coal for such support, and shall obtain the formal approval of the commission thereto, of the application wherefor we shall have notice and an opportunity to be heard before the commission, we agree to provide such artificial support as the commission may direct at the expense of the owner or to sell him such pillar coal as it may direct us so to do at a price to be fixed in each case by the commission which shall fully compensate us for the value of such pillar coal, the decision of the commission, however, on the question of value to be final. Pillar coal so purchased shall be granted to the owner by the coal company for the sole purpose of surface support with restrictions against the mining or removal thereof, and the coal companies shall not assume, because of any such sale of pillar coal, any legal obligations because of any surface damage or injury to persons which may subsequently ensue.

Sixth, This proposal applies to all cases where the right to surface support has been waived and to those only, and the obligation of each company subscribing hereto is several and not joint, and applies to its own mining operations only.

Seventh, At our first meeting your committee submitted to us a written statement with respect to the mine-cave problem which closed with this paragraph: "This committee believes that if there was in operation at this time a plan under which the surface owners were assured that every precaution would be taken to protect the surface where possible, or, if support is not feasible, that they be assured of receiving full damage for any injury that might result to their property because of the subsidence of the surface, then the fear and anxiety now existing should be removed."

We submit that the plan hereby proposed complies with your suggested solution to the extent of covering some 96 per cent. of the buildings of the surface owners of the city, and that with respect to the remaining 4 per cent. of such buildings it differs only in obligating the owner instead of our companies to bear the expense of their protection. If your committee will agree with us, as to the members of the commission and the form of the agreement between it and ourselves, we will immediately carry out this proposal.

This proposal was signed by the following companies: The Delaware, Lackawanna & Western Railroad Co., by W. H. Truesdale, president; Scranton Coal Co., by John B. Kerr, president; Pennsylvania Coal Co., by W. A. May, president; Peoples Coal Co., by Frank P. Christian, president; Green Ridge Coal Co., by W. L. Connell, president; Bulls Head Coal Co., by Jay Law, treasurer; Quinn Coal Co., by T. F. Quinn, treasurer; Spencer Coal Co., by David Spruks, president; Carney & Brown Coal Co., by John Carney, president; Nay Aug Coal Co., by David Boies, president.

Quite recently the directors of the Scranton Board of Trade met in secret session. It has been stated they ordered that the proposition just recited be received and filed, and earnestly recommended that this voluntary offer of the anthracite operators be given a fair trial. This expression of approval from the Board of Trade is significant, as it comes from a group of men representative of the best business and property interests of the city. There are many individual expressions of opinion in favor of acceptance and various members of the Board of Trade have made and are making speeches upholding the proposal. On the other hand, the Scranton Surface Protective Association has expressed disapproval of the proposal made by the operators.

The Mine-Cave Committee is still continuing its efforts to secure additional concessions and it is endeavoring to get the Delaware & Hudson Co. to sign the agreement. The fact that this important coal company withholds its signature to the instrument militates seriously against its meeting with general favor.

In this connection it is important to note that the coal operators in June, 1917, made an offer to repair all damages to structures valued up to $5000 in case they were injured by mining operations, also to repair streets and sell protecting pillars. The Delaware & Hudson Co. signed that offer for a five-year term, and it is understood that it is living up to that agreement.

Since the proposal has been made public, popular sentiment has obtained two concessions which were not included in the original agreement: A proposal on the part of the coal companies to protect individual gas, water-service and sewer-pipe connections, and a modification of the terms of the proposal so as to provide for repairs to structures damaged from June, 1917, instead of from the time of the acceptance of the proposal as the provision now appears in that document. It is expected that the proposal now will come before the city council of Scranton, whose action is important, as the council is the legal agent of the people and the city.

An important feature of the present proposal is that it does not aim to give the coal companies any rights which they do not already enjoy, nor does it take away from the people any rights which they now possess. The proposal is a voluntary offer of the companies, who are willing to bind themselves to do certain things that present laws do not require them to do, and the people are not asked to sign any contracts. These concessions are conditional upon a reasonable attitude on the part of the people toward the proposal of the mining companies. The people will secure concessions simply by not resisting the proposal; if it is not accepted by acquiescence then the proposal is void. A strong opposition will put the matter back where it was and little will be gained.

The coal companies agree that if at any future time a better proposition should be brought forward they will welcome it and substitute it for the one under discussion at present. On the other hand, the anthracite mining interests will fight any legislation supporting a proposition making larger demands on them. The parties to the controversy represent large investment demanding an opportunity for development. The mining companies own the coal and those controlling the surface have valuable property upon which to build. The coal interests do not wish to stop the real progress of the city, but they do wish to regulate it on commonsense lines. They do not care to be placed in a position where they will have to settle for damages to new structures, therefore they claim that those desiring to build should first secure a permit. There is sufficient safe ground on which to build. In the course of time, when a section is mined out and has settled, then it will be suitable for building purposes. Most of the city is over deep mining, and it is only in limited sections where the question would come up. Permits would tend to prevent construction in unsafe places. The matter should be so adjusted as to permit of the proper recovery of the coal and yet not to restrict the natural growth of the city.

Last year's developments have modified many views which were previously held by the users of fuel, particularly by the consumer of the domestic sizes. The present would seem to be the psychological moment to adjust differences connected with coal mining, at a time when the whole mining industry is being reviewed by the Government, costs analyzed and so on. Our dependence upon coal was never before brought out so strongly. We possess vast deposits of fuel, but they are by no means inexhaustible—the limited quantity of anthracite especially should be most carefully conserved at every point. The hard coal of Pennsylvania is a valuable asset, not only to the companies who control it but to the many millions of anthracite mine workers who find it a source of income, to the state which receives from it much assistance from taxes, and to the manufacturers which by its aid make various products. It is inconceivable that any step would be taken which would seriously handicap so important an industry.

Anthracite Shipments Continue To Increase

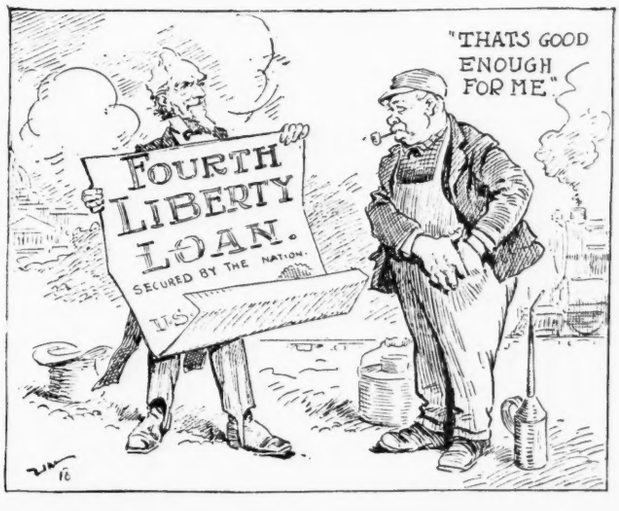
Anthracite operators and miners are keeping their promise to the United States Fuel Administration that the anthracite production of last year would be maintained and, if humanely possible, exceeded, as indicated by the statements of shipments reported to the Anthracite Bureau of Information. The shipments in August of this year have established a new record for that month, repeating a similar record made in July. The quantity sent to market last month amounted to 7,180,923 gross tons, an increase over July, when the shipments amounted to 7,084,775 tons, of 96,148 tons, and exceeding the tonnage of August, 1917, by 166,927 tons.

The total shipments for the first five months of the present coal year beginning Apr. 1, have amounted to 34,388,996 tons as compared with 33,297,109 tons for the corresponding period of last year, a gain of 1,091,887 tons, or a little over 3 per cent.

The shipments by companies were as follows:

	August, 1918	August, 1917	Coal Year, 1918	Coal Year, 1917
P. & R. Ry	1,408,501	1,373,473	6,764,594	6,316,774
L. V. R.R.	1,350,331	1,245,786	6,526,373	6,112,024
C. R.R. of N. J.	644,186	597,890	3,003,598	2,977,264
D., L. & W. R.R.	1,048,346	1,118,986	5,143,966	5,241,109
D. & H. Co.	846,788	781,606	4,038,552	3,772,411
Penna. R.R.	504,367	504,819	2,433,488	2,447,163
Erie R.R.	847,169	812,114	3,884,290	3,839,010
N. Y. O. & W. Ry.	170,313	186,679	887,639	862,124
L. & N. E. R.R.	360,922	392,643	1,706,496	1,729,230
Total	7,180,923	7,013,996	34,388,996	33,297,109

Good Security



Revision of Storage Regulations

The United States Fuel Administration announced on Sept. 14 a revision of the regulations governing the storage of coal by consumers listed on different preference schedules. This revision brings the practical distribution of coal into line with the statistics of production and consumption in different districts as developed during the past 30 days.

With the present complete information coming to the Distribution Division of the Fuel Administration and showing exactly the production, consumption and stocks on hand in every district, it is possible not only to change where necessary certain movements of coal, but the accumulation of winter storage, which is at this time the most important element of distribution, can be made to play an important part in getting maximum production or utilizing all available transportation most efficiently. Each week the Distribution Division has before it accurate figures showing the production of every mine during the week previous, also the consumption by all consumers and the accumulation of stocks on hand. If coal is taken into storage wherever possible in each district along the lines laid down by the regulations, it will militate to the advantage of both consumers and producers.

The amount of storage allotted to each district will be altered from time to time as may be necessary to carry out the plans of the Distribution Division for the coming winter. This plan is designed to obtain the utmost from our transportation equipment with the least danger of any district being out of coal next winter on account of its distance from the mines. Consumers on the preference classes recently defined by the War Industries Board are permitted to accumulate reserve stocks of bituminous coals as follows:

Maine, 135 days; Massachusetts, Vermont, New Hampshire, northern New York, 105 days; Connecticut, Rhode Island, southwestern New York, 90 days; southeastern New York and New Jersey, 60 days; Delaware, eastern Pennsylvania, Maryland, District of Columbia, Virginia, Florida and western Ohio, 45 days; western Pennsylvania, West Virginia, eastern Kentucky, eastern Ohio, 35 days; lower Michigan, 90 days.

Consumers in class 2 are permitted to accumulate reserve stocks of bituminous coals as follows:

Maine, 120 days; Massachusetts, Vermont, New Hampshire, northern New York, 90 days; Connecticut, Rhode Island, southwestern New York, 75 days; southeastern New York and New Jersey, 50 days; Delaware, eastern Pennsylvania, Maryland, District of Columbia, Virginia, Florida, western Ohio, 40 days; western Pennsylvania, West Virginia, eastern Kentucky and eastern Ohio, 30 days; lower Michigan, 75 days.

Consumers in class 3 are permitted to accumulate reserve stocks of bituminous coals as follows:

Maine, 105 days; Massachusetts, Vermont, New Hampshire, northern New York, 75 days; Connecticut, Rhode Island, southwestern New York, 60 days; southeastern New York and New Jersey, 40 days; Delaware, eastern Pennsylvania, Maryland, District of Columbia, Virginia, Florida, western Ohio, 35 days; western Pennsylvania, West Virginia, eastern Kentucky and eastern Ohio, 25 days; lower Michigan, 60 days.

Consumers in class 4 are permitted to accumulate reserve stock of bituminous coals as follows:

Maine, 90 days; Massachusetts, Vermont, New Hampshire and northern New York, 60 days; Connecticut, Rhode Island, southwestern New York, 45 days; southeastern New York and New Jersey, 30 days; Delaware, eastern Pennsylvania, Maryland, District of Columbia, Virginia, Florida and western Ohio, 30 days; western Pennsylvania, West Virginia, eastern Kentucky and eastern Ohio, 20 days; lower Michigan, 45 days.

Consumers not on the preference list are limited to the following stocks:

Maine, 45 days; Massachusetts, Vermont, New Hampshire and northern New York, 30 days; Connecticut, Rhode Island, southwestern New York, 20 days; southeastern New York and New Jersey, 20 days; Delaware, eastern Pennsylvania, Maryland, District of Columbia, Virginia, Florida and western Ohio, 15 days; western Pennsylvania, West Virginia, eastern Kentucky and eastern Ohio, 15 days.

There is no restriction on the stocks of screenings which may be accumulated by either preference or non-preference consumers in Ohio or Lower Michigan, nor is there any restriction on the stocks of Indiana, Illinois or western coal which consumers may obtain.

Supervision of the accumulation of stocks in accordance with these limits will be exercised by the several State Fuel Administrators who are authorized to make exceptions where special conditions make it necessary.

Keeping Tabs on Absentees

Under a modification of the Fuel Administration's production committee plan, the Clearfield Bituminous Coal Corporation, operating eight collieries, has attained gratifying results. H. J. Hinterleitner, general superintendent, with headquarters in Clearfield, Penn., says that a marked advance has been made in the average daily tonnage per miner employed and that absence from work has been reduced from 21 per cent. to 9 per cent. within three months.

It was in May that the foremen and superintendents of the company met to discuss production, and it was decided finally to have a committee at each mine, to be comprised of three miners in addition to the foreman and his assistants. The locals of the United Mine

Workers took an interest and assisted the foremen to choose representative miners, men of sound patriotism. Foreign-born citizens are included in these committees.

Through their work, these committees reduced the percentage of absence from 21 in May to 13 in June, and in July there was a general meeting of all the committees in the Clearfield office. Charles O'Neill, production manager for the district, and other prominent mining men attended. It was finally decided, among other things, that each absentee from work should be visited and invited to tell why he was absent. This phase of the work is not running so smoothly as it might just yet, but a good start has been made, according to M. D. Edmonds, of the Fuel Administration, who just has visited the section.

In August the total number of working days lost at the company's mines was 2379. The committees were able to report on 1620 of these lost days. Some of the reasons would be humorous, Mr. Edmonds says, if absenteeism at the mines were not such a serious matter. Liquor was responsible for 93 of the lost days. Soreness of arm, hand, leg, knee, foot or back accounted for 107. Sickness or other disability was responsible for 485 lost days. Mr. Edmonds believes that some of the ill health was chargeable immediately or remotely to liquor. Thirteen of the lost days were due to the fact that the man who should have been working was motoring instead. Ninety-seven days were lost because the miner was doing farm work. In 36 instances the miner failed to arrive in time to go to work. Nine gentlemen "did not feel like working," while 38 gave no excuse. Injuries and other reasons, most of them legitimate, accounted for the rest of the delinquency.

Suggested Changes in Revenue Bill to Benefit Coal Production

Changes in the revenue bill, which will improve the coal situation, were pointed out to the Senate Finance Committee by J. H. Allport. Mr. Allport appeared in behalf of bituminous coal operators. He was introduced to the committee by Senator Penrose of Pennsylvania. A portion of Mr. Allport's statement is as follows:

We find in reports of the probable wording of the new War Revenue Bill and in the rulings of the Treasury Department a strong tendency to put costs of certain necessary mine work usually paid out of earnings to capital account and thus increase the taxable earnings.

This, we believe, is resulting in a curtailment of improvements and developments in the coal mines which will inevitably result not only in checking increases in production, but in an actual and very serious decrease in the present production.

The operators cannot and dare not increase their capital by charging to capital account developments and replacements necessary to maintain production, nor can they thus charge the full cost of extensions and new machinery necessary for increased production and to replace man power by machinery at the present abnormal costs, as they well know that under normal conditions they will be unable to earn the interest charges on such inflated capital.

Under these conditions we would respectfully suggest that influence should be exerted to avoid such a catastrophe and we would urge that the utmost efforts be exerted to have included in the pending war revenue bill the following principles:

In all coal mines operating expenses to be deducted from gross earnings shall include all expenditures made during the tax year for:

1. All extensions required to maintain output, including the cost of all labor, materials, machinery, and supplies.
2. All machinery installed to replace human labor, including the cost of installation.
3. The cost, above pre-war figures, of all improvements and developments made to increase output, including all labor, machinery, material and supplies required for same. The cost of such improvements at pre-war figures to be charged to capital account.
4. An allowance for "mining hazards," if actually set aside in cash or invested in Liberty Bonds, of not exceeding 2½ per cent. of the value of the coal at the mines.

We believe that if the above can be included in the War Revenue Bill, the result will be to permit and encourage substantial increases of output, which under the law as now proposed and as interpreted by the Treasury Department, would not and could not be attained, and we believe unless action of this sort is taken that instead of the necessary increase an actual and probably serious decrease of production will result.

Further, with such a law the taxable income of the mines will, we believe, yield a far greater revenue to the Government than will be yielded if development and extension is penalized by putting these charges into capital.

Government to Operate Barge Line

Operation of the Government's barge line on the Warrior River in Alabama is to begin in the near future. A considerable number of barges have been secured by the Government, including several self-propelled steel barges. This equipment is capable of taking coal to tidewater at New Orleans at the rate of 300,000 tons annually. Marine designers, however, are at work on new steel barges especially designed to obtain the full efficiency of the Warrior River's locks. When these barges are in service, they will have a combined annual capacity of 1,600,000 tons of coal. The Railroad Administration has leased the Lake Borgne Canal, which allows the landing of coal at the locks in the Mississippi River at Violet, just below New Orleans.

Ordnance Department Officials Transferred

Twenty-two officers and civilians formerly handling fuel matters for the Ordnance Department and located in various production districts have been transferred to the Quartermaster Corps and have been assigned, under the direction of the Fuel and Forage Division of the Corps, to the offices of the State Fuel Administrators in New England and the states east of the Mississippi River, the War Department announces.

The location of these representatives of the Fuel Branch follows out the decentralization plan of the Fuel Administration, and while they will be located in the State Fuel Administrators' offices, their duties will be to assist all War Department contractors in securing their fuel requirements. They will also be of service generally to all coal consumers who are supplying equipment or material to the War Department.

A weekly meeting of the representatives of the various corps or bureaus of the War Department is held in the Fuel Branch of the Fuel and Forage Division of the Quartermaster Corps, at which are discussed all matters pertaining in any way to fuel assistance to army contractors.

Coking Coal Production Records Broken

Coal production in the Connellsville district of Pennsylvania continues to break all records. Reports forwarded to James B. Neale, Director of Production, United States Fuel Administration, by W. L. Byers, Production Manager, say that in the week ended Sept. 14 the output was 736,621 tons, a gain of 18,400 tons over the previous high record.

This continued increase in Connellsville coal is of direct importance to the military agencies responsible for supplying shells and guns to the American army in France. Connellsville coal is a high-grade fuel from which is derived much of the coke used in making steel for military use.

The increase of last week, 18,400 tons, if reduced to coke, would be sufficient to manufacture approximately 10,000 tons of pig iron to be converted into shell steel, gun forgings or plates for ships. It is the expectation of the local production committees to bring the weekly output of the Connellsville district up to 800,000 tons.

Production Committee Plan Successful

The production committee system, sometimes in modified form, is in force at mines representing 85 per cent. of the output in central Pennsylvania, according to Charles O'Neil, production manager for the Fuel Administration. Already a group of mines which embraces the Rochester and Pittsburgh Coal and Iron Co., the Jefferson and Clearfield Coal and Iron Co., the Tidewater Coal Co. and a few others is reported to be expecting an increase of a million tons during this coal year, or roughly 20 per cent. increase, through the work of production committees. The Allegheny River Mining Co. is finding the plan successful, and at the Seminole mine the committee has reduced the Monday idleness percentage from 26 per cent. to 7½ per cent.

United States Coal Exports in July

An increase is shown by official statistics in the amount of coal exported in July of this year, as compared with July of last year. Figures compiled by the Department of Commerce for July, 1918, and those for July, 1917, as finally revised, are as follows:

Exports	July, 1917	July, 1918
Anthracite, tons	390,619	395,537
Bituminous, tons	1,567,461	2,244,530
Exported to:		
Italy	28,522	....
Canada	1,389,261	1,873,750
Panama	23,849	55,656
Mexico	5,334	11,536
Cuba	51,193	105,137
Other West Indies	25,805	19,437
Argentina	12,743	47,528
Brazil	12,122	68,362
Chile	....	1,343
Uruguay	2,755	49,685
Other countries	17,883	12,095
Coke, tons	52,665	145,490

The only coal imported into the United States during the month under review was from Canada. The amount brought in during July of this year was 108,656 tons, which is 400 tons more than the imports for the same month last year.

American imports were $241,000,000 in July, compared with $260,000,000 in June. For the first seven months of 1918 the imports were $1,767,000,000, as against $1,779,000 last year.

Legal Department

UNITED STATES COAL LAND ENTRIES.—Under Federal statutes authorizing entries upon coal lands of the United States, but declaring that the statutes "shall be held to authorize only one entry by the same person or association of persons," a corporation, although entitled to take up 320 acres under a single entry, exhausted its right in the taking up of a tract of 84.4 acres by an individual for its benefit, and could not acquire valid title under subsequent entries made for its benefit. (United States Circuit Court of Appeals, Eighth Circuit; Union Coal and Coke Co. vs. United States; 247 Federal Reporter, 106.)

ACCIDENT AT COAL CONVEYOR.—Plaintiff, a laborer, was assigned to the task of removing rock, wood, etc., from a moving coal conveyor. The traveling wheels on which the conveyor belt ran were secured on their axles by bent nails used as a substitute for cotter pins. One of these nails caught in plaintiff's clothing, resulting in his serious injury. Held that the employing company is liable as for violating the Alabama Employers' Liability Act by permitting the existence of a defect in the condition of its ways, works and machinery, or on the theory that the foreman was negligent in assigning plaintiff to work in a dangerous place. (United States Circuit Court of Appeals, Fifth Circuit; Russell vs. Sloss-Sheffield Steel and Iron Co.; 247 Federal Reporter, 289.)

EXPLOSION OF MINE GAS.—If plaintiff, a miner in defendant's employment, was injured through an explosion of mine gases accumulated where he was working at the face of an air-course, driving the course and mining coal therefrom, and if the accident was due to the operator's failure to furnish a sufficient current of fresh air to the face of the course for the purpose of diluting and rendering harmless any noxious and explosive gases that might be accumulated there, plaintiff is entitled to recover damages, unless the accident can be attributed directly to some negligent act on plaintiff's part or to his so suddenly opening the gases in the course of his work that, in the ordinary and customary methods of inspection, the dangerous condition was not discovered or discoverable by the operator before the occurrence of the accident. (Oklahoma Supreme Court, Tolekis vs. Rock Island Coal Mining Co., 171 Pacific Reporter, 17.)

Liberty Bonds Keep Both Running

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

Only with difficulty can one speak with composure about the strike in the area of the anthracite region lying between Shenandoah and Shamokin. Many of the mine workers themselves acknowledge that the action of their fellows was inexcusable. It is solely because of the generality of that opinion among the men that the mines are once more again at work. It is, however, hard to have to admit that in the coal industry there are so many disloyal men that a strike of the magnitude of that which occurred could be put into operation.

Let us resolutely turn our attention to the brighter side of the picture, remembering that the workingmen of America are so numerous that they truly constitute this nation. To doubt the essential rightness of their impulses is to question the essential rightness of the American people. It is treason to believe, as some of us do, that the heart of the workingman is not right.

NATION IS NO GREATER THAN ITS WORKINGMEN

We who believe that America is a shining exemplar among forward-looking nations must change our notion if we cannot on the whole indorse our working class. Labor must be regarded as loyal and patriotic, or we must despair of our nation. Under a democratic government a nation is no greater than its electorate, and its electorate being dominated by its laboring element is not greater than its workingmen.

There is no reason to believe that our laboring men are not animated by the purest of Americanism. The strength with which labor threw aside the Bolshevism of the leaders in this strike tends to prove this thesis. The nation must rest on its workingmen, and America can well afford to do so. The majority of them are sane, clean, sacrificing fellows to whom an opportunity for service is always a call of duty.

Because of this attitude the strike did not spread to the Wyoming-Lackawanna and Lehigh regions. At Hazleton there was no talk of trouble. The district officers of the United Mine Workers in District No. 7 met at Nesquehoning on Sept. 16 and passed a resolution condemning the unauthorized strike in District No. 9.

ANTHRACITE STRIKERS ARE MOSTLY FOREIGNERS

It is said that 80 per cent. of the strikers are foreigners and that a large number are of Austrian birth or of Austrian ancestry. The English-speaking miners are for the most part opposing the strike. As for the new union of petty officials, nobody expects any trouble from that source. They are recognized as "members of the official family," as Robert A. Quinn, the general manager of the Susquehanna Collieries Co., well says, and the companies are disposed to look upon their action with kindly consideration. They know these men are working harder and making less money than the miners under them. The operators contend and contend rightly, that before the war the work of the foremen was steady, whereas the mine workers received only part time. But the divergence in pay cannot be satisfactorily explained on that basis alone. There will never be any degree of difficulty between these bosses and the operating companies, for the common viewpoint of employer and employee makes a strike unnecessary and unlikely.

Although coal is an essential in the nation's warfare, commissary and mine clerks are not to be granted deferred classification. This fact has led some people to regard these workers as performing an entirely nonessential service. That is, of course, ridiculous. The orders of Provost Marshal General Crowder class these men as easily replaceable, though essential. When the draft falls naturally upon them they are subject to it, but unless it does, they cannot be required to enlist or leave their present service. They are working acceptably to the nation and the "work or fight" order does not apply to them. That order, however, is said to apply to sales agencies and sales companies.

In the Connellsville region the system of keeping track of the slacker recently put into operation is working well according to statements made at a recent meeting between Walter S. Blauvelt, coke director of the United States Fuel Administration, and the operators of the Connellsville region. The men are now working more steadily.

So far, for the most part, the companies have posted the names of those only who, without reasonable excuse, miss a day's shift. But they are now beginning to list the full-time men on the bulletin board, and at some mines a small button is issued to loyal mine workers. Production Manager W. L. Byers has been so much impressed with the value of posting records of full-time men that he has ordered the plan to be followed at all mines, the names being posted every two weeks.

EVERYONE MUST WORK FULL TIME OR FIGHT

It is quite likely that we shall soon write Provost Marshal General Crowder's famous dictum, "Work or fight," in a more wordy but more definite way: "Work full time or fight." W. L. Byers, the production manager just mentioned, and George E. Gay, a member of the appellate draft board, have decided that consideration shall only be given to full-time men when applications are made for deferred classification. Men who lapse will have no standing with the draft board and the production department will regretfully have to stand by when their enrollment is considered. Only a diligent mine worker will get credit for his win-the-war activities.

There are three bituminous regions which the United States Fuel Administration is particularly anxious to spur into activity. Naming them in order they would probably run: West Virginia, central Pennsylvania and western Pennsylvania. The first two produce the highest grades of coal for bunker, byproduct and smithing uses and the third furnishes a large production of the beehive coke. Being so near Pittsburgh, the output of the western Pennsylvania coal has from that fact alone an unusual importance.

NEALE GIVES GOOD COUNSEL TO MINE OPERATORS

A meeting was held at White Sulphur Springs, W. Va., on Sunday, Sept. 15, under the auspices of James B. Neale, the director of production of the United States Fuel Administration. More than 200 operators, managers and general superintendents, and prominent railroad men were present. Important heads of the Fuel Administration were also there to give counsel.

Mr. Neale appealed to the presidents of the companies and to all the other officials to get "to the pit just as often as possible." "Don't deceive yourself," he added, "with the idea that the office at New York, Philadelphia, or Boston demands your attention. Be shoulder to shoulder with the boys getting out the coal. Don't sit back on Broadway and write to them to "Go to it," but go down to the mine and urge them to "Come to it."

He then observed that the operators, like the mine workers, were obsessed with the idea that the interest in the

war lay in France. He impressed on them that an extremely vital part in the war was the work they were doing.

"You are not going to be in the spotlight," he said, "but I wish to emphasize for you the courage of the commonplace." Speaking of the lack of coöperation between the mine workers and their managers and employers, he said to the latter: "If your miners are not in sympathy with you, it is not wholly their fault. The time to change the attitude of the miners in your favor is now. I call upon all operators to do what is noble and fine. There is not a man in this room who does not accept the idea of the brotherhood of man as a theory. I want him to accept it as a fact. If this is a war of righteousness, we should be righteous here at home and do here those things we ought to do."

Neale Appeals for Greater Breadth of View

Mr. Neale referred also to the tendency of the operating heads to bewail the draft and the car supply instead of busying themselves to find out what they could themselves do to remedy the conditions by which they are faced. He urged the operators to put their stress on the righteousness of the cause rather than on the opportunity to make money, believing that the miner would be far more swayed by patriotism than by pelf. Speaking of production committees, he said: "Let us recognize that this is a big job and that the work to which we have set our hand cannot be done by little men—I don't refer to stature. Do nothing that betokens spite, envy or jealousy. Handled rightly, the committees will do important service. When the blame is found to lie with the bosses, let the bosses accept it as a fault of the company. If the company tries to pass the buck to the men or vice-versa, production committees will prove to be a farce." Mr. Neale said that the material support given to the boys in front would save their lives and he urged that between materials and lives there could be but one choice.

A letter from President Wilson to Adam B. Littlepage of the House of Representatives was read. It runs as follows: "I am sure that I am only one of thousands of Americans who have been proud of the fine spirit manifested by the operators and miners of West Virginia. West Virginia, as we all know, supplies the coal that must be used to run our battleships and destroyers and to enable us to transport our soldiers across the sea. The coal miners and operators of West Virginia, therefore, are playing a very direct and responsible part in the conduct of the war. Will you not take occasion to express to them the very high appreciation of the Government and its confidence in the continuance of their zealous and self-sacrificing efforts?"

The district draft board for the southern district of West Virginia has classified coal-mine workers, who are properly proven experienced and efficient, as "skilled laborers" in a "necessary industy" and has decided to classify them in Class 2-D. This ruling is applicable to the future only and does not in any way affect miners heretofore classified without deferment and who have been inducted into military service.

Consolidation Resolute for Wage Contract

The recent agreement with the union in the Fairmont region terminates a long period of cross purposes. The Consolidation Coal Co. was induced to accept the policy of the War Labor Board in favor of allowing union labor organizations to follow out their "legitimate activities." This decision, announced by the *Wheeling Majority*, a labor paper published in Wheeling, W. Va., was denied by a Fairmont paper on the authority of a leading official of the "Consolidation," but it ultimately proved to be true, for later George T. Watson himself came to Fairmont and broke the news.

The coal operators' association did not approve of this free-lance action of the Consolidation Coal Co., feeling that any such momentous decision should have been considered in conclave. But as this, the major company of the region, almost welcomed the labor organizers, nothing could be done to keep them out. While the organizers were building up a strong union membership, the Northern West Virginia Coal Operators' Association was expanded by the absorption of four minor organizations. When the association thus strengthened met at Clarksburg they were fully determined to give the mine workers no recognition.

Again the Consolidation Coal Co. acted independently, but when George F. Watson came to Fairmont and again put the matter before leading operators there was not a single one who heard his talk and held out. So a group of operators representing 87 per cent. of the production of the region met the scale committee of the miners and signed an agreement. In the latter part of last week Frank Keeney, president of District No. 17, with his scale committee, met the Sewickley vein coal operators at the Fairmont Hotel, Fairmont, W. Va., and they signed an agreement. In both agreements—that with members of the Northern West Virginia Coal Operators' Association and that with the Sewickley Vein Coal Operators' Association—the Flemington scale was accepted. Flemington is in the Fairmont district and it gives its name to a section which was unionized some time before the United States took any hand in the present war.

No Man's Wage To Be Lowered by Agreement

Some mines are paying more than the Flemington scale. The wages which are paid to the men in the employ of these companies will be regarded as a right of which they are not to be deprived so long as they remain in the employ of that company. When a new man is employed the rate of pay will be reduced to that provided in the Flemington wage scale.

More than 200 striking miners at the Devereaux mines near Springfield, Ill., have returned to work as the result of a conference at the office of United States District Attorney Knotts. The men had been idle about three weeks and production was curtailed 1000 to 1200 tons a day. Some time ago the company at the request of the miners' local substituted one make of powder for another. The miners after a short trial complained that the new powder did not work as well as the old, and submitted the question of discontinuing it to a commission composed of the district board members, Steve Sullivan and Dan Clark, representing the operators' association, which decided against the miners. The miners refused to comply with the finding and quit work. At the request of both parties the controversy was referred to the district attorney. Several conferences were held. At the final one the miners agreed to return to work pending an investigation as to the merits of the powder.

Local Wants Operator To Pay for Men's Bonds

In the Belleville district of Illinois one of the local unions has passed resolutions urging its district and national officials to do all possible to secure an increase in wages so that the miners may be enabled to subscribe for Liberty Bonds. The local (No. 99) passed the following resolution: "Whereas, an increase in price of coal has been granted the coal operator within the past year, thereby allowing him to exact enormous profits over and above the price at present paid for mining and whereas the Fourth Liberty Loan drive is fast approaching and may well place the coal miner in a bad light by reason of his inability to purchase bonds comparable in amount with those purchased by the coal operator with money which we deem rightfully belongs to the miner who produces the coal, therefore be it resolved that we, the members of Local 99, go on record as favoring a just and substantial increase in wages and urge upon the district and national officers to employ every effort toward securing it." The union voted to make an assessment of $1 per member for five pays, the money thus collected to be disbursed as donations to patriotic organizations.

All the 200 miners employed at the Groveland mine of the Groveland Coal Mining Co., Peoria, Ill., have returned to work, the trouble which brought about their strike being satisfactorily settled. The men refused to work when the company would not or did not install a heater to dry their clothes. The heater has been set in place and the men have returned to work. The Lake Erie mine was also idle because of a disagreement over the wage paid.

Anthracite Miners Strike and Resume

After much agitation several mines in the anthracite region finally went on strike, Sept. 16. Prior to that time there had been many suspensions, as will be seen by a perusal of last week's summary, but on the date just mentioned the disorder broke out in many more places and covered a new and larger area. The many mines located at Shamokin, Ashland and Shenandoah were involved, but strange to say Mt. Carmel, lying between the first two cities, and Mahanoy City, which is quite close to Shenandoah, was not affected.

Broad Mountain also, which shuts off the field just mentioned from the Lykens Valley, Tremont, Minersville and Schuylkill Valley operations, acted as a fire wall to prevent the strike from spreading southward, though at one point south of Broad Mountain a strike did occur, namely at the Lykens operation of the Susquehanna Collieries Co. In all about 25,000 men went on strike, and the output of the anthracite region was cut about 5 per cent.

It must not be thought that at the mines which suspended there was any unanimity in favor of the suspension. It was evident that a number of men were kept away from work by intimidation. The union was against the strike, but the radicals who favored a suspension and who were said to be Industrial Workers of the World picketed the plants and made all opposition to their plans dangerous and inadvisable.

Americans Do Not Believe in This Strike

Where men are ardently volunteering for war one will not fail to find a large number who believe that their duty lies in supporting those who have gone to the front, and it was so in the strike region. At Mahanoy Plane, Local Union No. 1542 expressed itself as wanting "the world to know that its membership is composed of good stanch American citizens who propose to stand by President Wilson and the international union officials until the wage question is adjusted in a business-like manner. This union will take no part in the walkout and the members will continue to work like true Americans in order that the war may be brought to an early and successful consummation."

In the village of Frackville, a short distance from Shenandoah, where John McGinnis and other citizens had organized a Home Defense League, the pickets were ordered to go home or go to work, pending the Government's decision, and the threat was made that if they failed to accept one of these two most wholesome alternatives they would be interned as enemy aliens.

Dr. H. A. Garfield, the United States Fuel Administrator, telegraphed James Matthews, the president of the district (No. 9), as follows: "Please make it perfectly clear to all your men that as long as they are out on strike I will not confer with them, nor take any steps in their behalf and that they will be held personally and strictly responsible."

Voices Are Raised Against the Strike

This was Sept. 16. The next day saw a big change. District No. 7 on that day decided that its 20,000 men would continue at work. The St. Clair district voted similarly, blocking the strike to the south. Reports from Shenandoah, Girardville and Ashland showed that the men were going back to the mines. A few bad men were not able to keep them away from work after once the clergy and the business men had had an opportunity to argue the matter with them and a chance to urge on them immediate resumption.

The men at two of the Madeira-Hill & Co. collieries voted to go back to work, and so also did the mine workers of the Reading Coal and Iron Co. except those at Shamokin. Several mines at Lykens were, however, by this time involved and the men at these refused to resume their labors. Shamokin proved more obdurate than the other regions because of the campaigning of Chris Golden, who is a candidate to succeed James Matthews as district president. His influence is largely local, and Ashland, Shenandoah, Mahanoy City, St. Clair, Tremont and neighboring towns were not nearly so disposed as Shamokin to follow Golden and discredit Matthews.

A convention on Sept. 18 at Shamokin ended the strike. This conference was called by independent strike leaders without the approval of the United Mine Workers of America, a body which in no way countenances the abstention from work or any activity in connection therewith. As a result of this vote, on Sept. 19, the strike practically came to an end. On that date only the Blackwood colliery of the Lehigh Valley Coal Co. and the Buck Run colliery of the Buck Run Coal Co., at Minersville, remained on strike but the resumption of both collieries was expected on the morrow.

The mine workers complain principally about the higher wages paid in the bituminous field, where large increases have been given to correct the irregularity in the running of the mines. Now, however, the bituminous mines run almost as regularly as the anthracite. Another complaint of the anthracite men is that the cost of living is rising. They also claim that wages are higher in other war industries, which are not in any way more necessary nor more hazardous. To cap the climax they allege that they have been importuned to buy Liberty Bonds and War Saving Stamps and to give money to the Red Cross. They believe that they should not give this money themselves. The companies should pay them more wages and thus give them the means to subscribe without sacrifice to these worthy objects.

Some Demand Money To Pay for Bonds

If the money must be given them to "put in the plate," it is idle to pass the plate to them. Let it be handed to those who are willing to give of their own. The public cannot afford to pay the coal miners for Liberty Bonds purchased as well as for services rendered. The public would sooner pay present prices for coal and buy Liberty Bonds itself. If Liberty Bond money is to be presented to the miner, then he is making no sacrifice in the buying of bonds, and he is rendering no service to the nation in purchasing them. Probably there are but few of the mine workers who harbor the foolish idea that bond purchases entitle the purchaser to a wage increase, though, of course, a man who has subscribed heavily would find such an increase more than convenient.

In the northern anthracite field the situation is quite tense though the strikes have been only local. There is a general movement for a strike and a new union. It is, however, general in this sense only that it is found at most mining centers, the degree of its strength in some places is possibly open to question. Most of the men oppose the strike and many are still loyal to the union. On Sept. 14 the Langcliffe mine workers of the Hudson Coal Co., in Avoca, who are mostly Austrians, voted to continue their strike till an increase of wages is granted. These men demand $7 a day for miners and $5.50 a day for all other workers about the collieries.

Langcliffe Miners' Demands Preposterous

These demands are preposterous. The wage earners in other industries who have received no increases in wage whatever since war began feel bitterly about miners like those of the Langcliffe type, who are putting both feet into the feeding trough and are absorbing everything for themselves while good American workingmen go without. The public will have to pay for the Langcliffe profiteering, and they are getting impatient. The American people are beginning to feel that it is time to cry "America for the Americans" and tell these foreigners that this country is not a place for their exploitations.

We are a long suffering people and have a warm place for the foreigners whose hearts and aims are in common with ours and who are willing to fare equally with us as citizens of a common country. But these rascals who strike while Americans work, who demand that they get twice as much as the generality of unskilled Americans, are arousing in America a spirit which they will keenly regret.

EDITORIALS

Miners Oppose Ending of Apprenticeship

MINERS in the anthracite region are strongly wrought up about the attacks now being made on the long-established apprenticeship requirement in the mining law of the hard-coal region. No man can act as a miner until he has had two years of experience. The miners say that if the law were repealed it would not aid in increasing production, for the shortage of men is greater in the ranks of the laborers, motor runners and drivers than in the ranks of certificated miners. They urge that if the employments now open to all comers cannot be recruited, what chance is there that the indiscriminate opening of other employments would cause those employments to be adequately filled with men?

The following table shows the facts as published by the anthracite operators. It will be seen that, at least in April, the shortage of miners was greater than the shortage of day men, but that condition was in some places reversed.

Employments	Men Employed, 1918	Men Employed, Apr. 1, 1918	Increase or Decrease	Per Cent.
Miners	42,830	42,186	—644	—1.504
Miner's laborers	21,990	20,768	—1,222	—5.557
Company men (inside)	42,763	42,143	—620	—1.450
Company men (outside)	42,949	42,515	—434	—1.011
All other employments at collieries	5,448	5,480	+32	+0.587
Total	155,980	153,092	—2,888	—1.8515

The table statistically supports the contention of the miners. The laborers from whom the supply of miners is to be replenished have decreased in numbers 5.557 per cent., whereas the loss in the number of miners has been only 1.504 per cent., or roughly a fourth as great.

But statistics occasionally form an unsatisfactory ground for an argument of this kind. The reason why mine laborers leave is because they are only mine laborers. They have the irksomeness of being tied down to a miner, who does little of the work and walks off with the bulk of the pay. The figures show that mining as compared with mine laboring is a desirable occupation, and that if it were thrown open to everybody it would prevent a number of men from leaving the industry and might well be the cause of a number entering the ranks.

The exodus of mine laborers results from a natural rebellion against the unfair conditions existing. Put the new man on a fairer footing, and it is quite likely that the ranks will be recruited. Where all employments are free and open there is a chance that they will be filled. Where privilege closes an employment it does not follow that it would not be filled if the privilege were removed. That men do not crowd to be underlings and to get poor pay is not a new phenomenon. So it is not strange, but natural, that the ranks of the mine laborers are the worst filled of any.

If the present conditions continue there may come a time when there will be no mine laborers whatever. It will mark a period of emancipation and democracy, and not at all a time to be regretted. In the soft-coal mines there is no distinction. All coal diggers are "buddies" with equal shares in the tonnage produced. There is no talk of "man and superman," and under this arrangement working forces of miners steadily increased till the war commenced. Even in 1917 the number of mine workers in central Pennsylvania was 7.5 per cent. greater in 1916.

A Corporal in Every Squad of Eight

IN THE army it is necessary so to arrange authority that every man is in touch with the commander-in-chief and can be set in movement by him. To such an extent is this carried that, as everyone knows, there is a corporal over every seven men.

We need an equal extension of authority in the mines. We do not want our men "bossed to death," but we want the coöperation and assistance which invariably result from the delegation of authority to an adequate number of men, and we want the complete knowledge which can only be attained by a sufficient extension of authority.

It is true that the appointment of an assistant foreman is often a misfortune. It furnishes a jealous foreman a chance to quarrel. It supplies an ambitious underling with an opportunity to strut in the limelight. It gives occasion to the assistant to put a burdensome yoke on the neck of the worker.

But while this may be the unfortunate result, it does not by any means necessarily follow, and the introduction of many subforemen instead of only one tends to have a totally different effect. The appointment of more numerous subordinates menaces the foreman's standing with the company less than the employment of one. When there are many of them there is less likelihood that the subforemen will overestimate their "brief authority." Appointed with the right kind of a talk, their appointment cannot fail to do good. They are there to help—to help the company, the mine foreman and the miners. They are to build up tonnage, to aid in securing clean coal, to increase enthusiasm, to represent the good will of the company, to coördinate the work of the various company employees, to learn just where the productive energy has or is about to be wasted or to be found lacking. They are not so much to rule as to aid. Good nature is as much needed as authority; leadership is required rather than drivership.

The companies with the biggest tonnages per man and the best handled mines are those with plenty of face bosses. The United States Coal and Coke Co. favors one sub-boss to 25 men. The Ellsworth Collieries Co. has always employed many subforemen. The Pennsylvania Coal and Coke Co. has just given its adhesion to a policy of one boss to 25 men and has appointed several "scouts" whose business it is to find why tonnage is not maintained. The Delaware, Lackawanna

& Western R.R., Coal Department, has had a number of men employed in just this capacity.

But it is a question whether that is really enough. The corporal is a fighter with his men. There is no reason why we should not have corporals in the mines who will work as well as lead the men. A man who can talk some foreign language could be corporal to those of the same nationality and could explain to them the conditions under which work is being, and should be, performed. He can explain why men are idle, why their tonnage is low, why their coal is not clean, why men are injured, and he can exhort them and the company to correct all the deficiencies whereby the tonnage is kept low, the coal is sent out dirty and men are converted into casualties.

The mine foreman cannot do all that is expected of him, but unfortunately he does not like to delegate authority. He will complain volubly about his inability to fill the myriad of activities demanded of him, but he is nevertheless opposed to dividing his responsibility. He is always on edge with the constant worry of his job, but just the same he wants to muddle along with it unaided. He knows he is performing it badly because one man cannot perform such a job well. When he is underground, he wishes he were at the tipple; when he is at the tipple, he wishes he were underground.

For the most part, he is in his little doghole of an office, scolding the miners for venturing to tell him that their places need rails or dewatering or a switch or air or props or something. He cannot correct these faults, for he lacks the subordinates to prove up the facts as stated or to put the necessary remedies in operation, and too often he lacks even the telephones to transmit his orders. If he goes underground, a quarter or a half a day is lost, and in the meantime he may be needed more outside. The superintendent will be storming because he cannot find him. So he finds it more profitable to swear at the miner and tell him to take his tools out if he doesn't like the place, all because he is not rightly equipped with help. So much for the present condition. Now for a statement of how it should be.

He should never even see that miner. The subordinate inside should have seen him and attended to his difficulty or should have corrected the trouble before the miner had time to complain of it; but in any event it should have been corrected by the subordinate before the miner made a two-mile trip to complain, only to meet with a rebuff from the foreman or to find a long queue of complainants ahead of him.

Lack of superintendence has broken many an industrial organization as lack of officers, commissioned and noncommissioned, has played havoc with many an army. The mining industry lacks officers. It gets along with a minimum of supervisors, and too many of those who do supervise are petty tyrants. They rule and make decisions without knowledge of conditions. They cannot get around the hundreds of places and see for themselves, and they lack the men who can. Let us get them out of this rut during the war. They are good fellows enough in their spare time; but at their work worry and the impossible demands made on them addle their brains, and in too many cases, we fear, unfit them for their positions.

Untrained Men Will Not Serve Our Ends

MOST of the industries have been content to take men in the rough and by putting them to work have endeavored to train them into industrial fitness, advancing them to places of importance according to the experience gained. The necessities of this war, however, could not wait on such slow processes of development. Every man was more or less a green hand in the game of war; defeat and perhaps death might have been the outcome of lack of experience, so it was necessary to accelerate the manifold processes by which the soldier's art was assimilated and take advantage of every facility.

The language question was tackled early. All the boys in the army will soon know how to understand their officers and how to report to them. All will know how to read a written order. These are elementary matters, but in mining we have not as yet reached them. Still the foreman goes from place to place and is met with "Me no forstay." Hurriedly an interpreter is summoned who may or may not correctly interpret the foreman's instructions. But the army is settling the matter fundamentally with the dictum, "Every man must know how to read and speak English."

But this is not enough. There are already 47,000 men being taught in army schools, and they will be turned out more or less completely trained at the rate of 23,000 a month. None of the colleges will operate this year except as military training schools, for the draft has wiped out all possibility of successful operation under civilian plans.

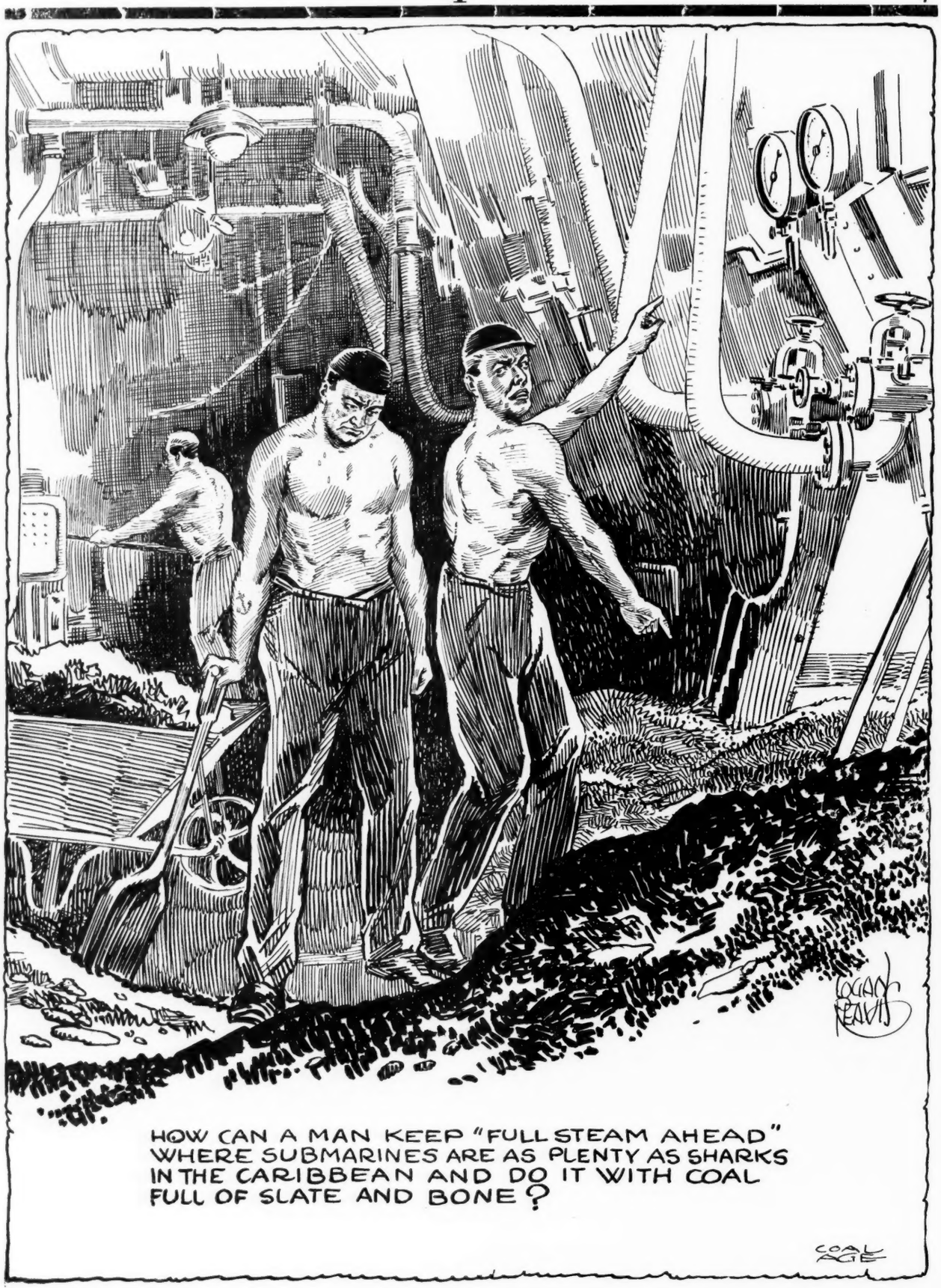
Those who enter college will be inducted into the army as privates, with a private's pay and subsistence, being under full military jurisdiction. Boys of 20 will stay in school three months, those of 19 six months, those of 18 one year. In all cases men who clearly show that they may make good officers or good technical experts may be detailed to take further instruction.

But besides these there are detachments of mechanicians under training. By Oct. 1, 90,000 men will be turned out, and the quota for the period between Oct. 1 and July 1 will be 220,000. Already 147 schools are engaged in this work, and 120 of them have been accepted for winter courses.

We are about to have a well-trained army. After the war we must have well-trained industrial workers. Not only the captains of industry, the managers, the engineers and the foremen must be trained, but the workingmen also must receive instruction. While there must be heads in every department of industry there is no greater need for the intelligent direction of industrial labor than for its intelligent performance.

The truth of this has been proved again and again. Our American engineers in foreign countries have repeatedly given up in despair the obtaining of a large output whenever the methods and mentality of the men in their employ militate against efficient operation. The industrial efficiency of the present day is only partly the result of our mechanical aids; it is at least equally the outcome of education and of the resultant psychological conditions.

Then Our Brave Ship's Stokers Lose Heart


HOW CAN A MAN KEEP "FULL STEAM AHEAD" WHERE SUBMARINES ARE AS PLENTY AS SHARKS IN THE CARIBBEAN AND DO IT WITH COAL FULL OF SLATE AND BONE?
COAL AGE

DISCUSSION BY READERS

Scraper Mining in Low Seams

Letter No. 2—Kindly permit me to refer to the letter of John Lloyd, efficiency engineer, Lehigh Valley Coal Co., which appeared in *Coal Age*, Aug. 22, p. 371. The letter refers to the scraper system described by H. G. Davis, of the Lehigh & Wilkes-Barre Coal Co., in the issue of the same paper for July 20, p. 92.

Mr. Lloyd takes exception to the statement made by Mr. Davis, who refers to myself as being "the first to introduce this system in the coal mines." The exception taken by Mr. Lloyd is based on the fact that the Lehigh Valley Coal Co. had made experiments with scrapers, early in 1914, at the Seneca Colliery of that company. He refers to the fact that I did not enter the anthracite region until the fall of 1915, and seems to associate my interests in the scraper system for mining thin coal, with my employment, while general superintendent of the Delaware & Hudson Co., of a former employee of the Lehigh Valley Coal Co. Mr. Lloyd states that this man was acquainted with the experiments that had been conducted at the Seneca colliery and had sketches of the system there employed.

Allow me to say that, in making these statements, Mr. Lloyd does me an injustice that I feel sure he does not intend and of which he would not be guilty were he fully acquainted with the actual facts, which are as follows:

Experimental Development in D. & H. Mines

Shortly after entering the employ of the Delaware & Hudson Co., I was given the problem of mining the "Twenty-Inch Bed" by mechanical means. The company had purchased shortwall-mining machines and, upon the recommendation of our consulting engineer, Eli T. Connor, we tried out all the methods known to us for removing the coal from the face without taking rock for height. These methods were specifically mentioned in an exhaustive report, which Mr. Connor had made, at some time previous, covering this particular bed, and which included buggies, face conveyors and scrapers.

The buggies we already had, as the Delaware & Hudson Co. uses hundreds of them. These were immediately put to work and a longwall conveyor of the chain type was ordered. We knew, vaguely, of the use of a scraper by the Lehigh Valley Coal Co. and tried to get their permission to visit the mine where it was reported to be at work. Not succeeding in this, however, we started experimenting with scrapers of our own design. Our first scraper was built of plank bound with iron straps. It looked very much like a snowplow and was operated by means of a small two-drum electric engine. This scraper was awkward, but it did the work after a fashion.

It is true that, in the course of these experiments, I employed a man as assistant who had been on the surveying corps of the Lehigh Valley Coal Co. and who had seen the scraper of which Mr. Lloyd speaks. But the man did not supply me with any sketches of it, and the knowledge that he brought to me concerning its operation was meager and had no bearing on our developments.

Subsequently, we built several other forms of steel scrapers and many different forms of snatch blocks and guides, for the purpose of controlling the scraper and causing it to load itself without the necessity of hand shoveling. Finally, we developed a method of control that caused the scraper, of itself, to dig out and move the undercut coal. It is the combination of devices that accomplishes this result and is covered by U. S. Patent 1,268,557, granted June 4, 1918.

The patent covers, in explicit terms, an improvement in the art of moving loose material and makes no claim whatever to a monopoly in the use of a scraper. It described specifically a method by which a scraper can be caused to load itself in a chamber and this is something that, to my knowledge, no other scraper system has been able to accomplish. The operation of the apparatus, as described in the patent, is radically different from that used in the mines of the Lehigh Valley Coal Co. which is described in the *Employees' Magazine* of that company for April, 1916.

The patents have been passed upon by a number of eminent patent authorities and licenses to manufacture the "Evans Scraper Loading Apparatus" have been granted to the Engineering Development Co. of Scranton; the Cook-Wilson Electric Supply Co. of Pittsburgh and the Goodman Manufacturing Co. of Chicago. The Delaware & Hudson Co. has 35 of these patented scraper systems at work, and nearly 60 additional sets of apparatus are under manufacture. The Pennsylvania Coal and Coke Corporation of Cresson, Penn., has about 12 sets of apparatus at work and 50 more under construction. The patented device is a proved success and while other scrapers are in use, they seem to be still in the experimental stage.

Retsof, N. Y. CADWALLADER EVANS, JR.

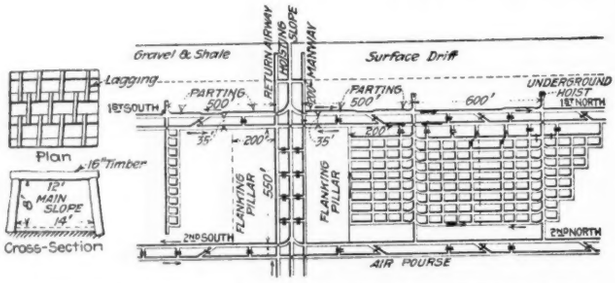
Working 10-Ft. Inclined Seam

Letter No. 6—An experience of a number of years, in pitching and flat seams, both in the United States and Canada, caused me to be deeply interested in the several letters published in *Coal Age*, in reply to the inquiry of "Superintendent," Mar. 23, p. 561. The proposition presented, namely, the working of a 10-ft. seam pitching from 10 to 15 deg., will appeal to most practical mining men as involving many important features in coal mining.

The plan I would suggest in the development of this seam is shown in the accompanying figure. The main slopes should be driven three abreast, on the full dip

of the seam, and cross-entries turned to the right and left, at distances of 200 yd. apart, center to center. These three main slopes consist of a hoistway or haulage road, a main return airway and a manway. Each pair of cross-entries is composed of a haulage road and air-course. As shown in the detail sketch, in the figure, the main slope is 14 ft. wide, in the clear, at the bottom of the road, and 12 ft. between notches on the collar, and has a headroom of 8 ft. The timber frames are set 4 ft., center to center, and the lagging above the collar is staggered, as shown in the sketch. This will afford a good support for the soft, sandy, shale roof.

The general plan of working is to drive butt headings to the dip or the rise of the cross-entries and turn rooms to the right and left of each pair of butts. The



SHOWING PLAN OF WORKING AND DETAIL OF TIMBERING THE AIRWAYS

butt headings are driven 600 ft. apart, so as to provide for rooms 300 ft. in length, which are turned on 50-ft. centers and driven to meet each other. In the figure, I have shown the butt headings as driven to the dip, the purpose being to yield quicker returns in the extraction of the coal, although this will require installing a compressed-air hoist at the head of each butt, to haul the coal up to the level.

Storage-battery locomotives should be employed on the levels and rope haulage on the main slope. Many will prefer to drive the butt headings to the rise, so that the coal from the rooms can be lowered to the level, which plan will also take care of the drainage from the rooms. In any case, the first pair of cross-entries must be turned at such a distance from the mouth of the slope as to provide a solid barrier of coal, 15 ft. in width, above the workings. This will prevent any undue inflow of water from the surface into the mine, during a rainy period.

Method of Working and Ventilating the Mine

As shown in the figure, the first pair of butt headings should be driven at a distance of 500 ft. from the main slope, which will provide a solid pillar of coal, 200 ft. wide, flanking the main slope and allow for rooms, 300 ft. deep, to be driven off the first butt heading. The general plan of the ventilation is indicated by the arrows in the figure, the main slope and haulage roads being made the intake.

In driving the rooms, I would use a shearing machine to shear the coal 6 or 7 ft. deep on the low side, which would give a loose end to shoot and materially increase the percentage of lump coal. The same method should be used in driving the cross-entries, but in driving the slopes or butts to the dip, the shearing cut should be made in the center of the breast and the coal shot from each side toward the center.

The slope track should be laid with 45-lb. rails and the same should be used in the cross-entries, while 30-lb. rails can be used on the butt headings driven to the rise or dip and 20-lb. rails in the rooms. The track ties on the main roads should have at least a 6-in. face and be spaced not more than 2 ft. apart, center to center. In the rooms, smaller ties can be used, spaced 3 ft. apart, center to center. All rail joints should be provided with fishplates. I much prefer the use of the "tumble switch" or ground-throw type, which reduces the chance of men falling over switch stands. When properly installed, the tumble switch is just as efficient and handled as easily as any other type. For drainage, good ditches should be provided on the low side of the road, as the condition of the track will depend much on its being kept dry and well ballasted.

Guarding Against Surface Disturbances

The inquiry states that the surface is traversed by numerous large streams and that the seam is subject to many irregularities and faults or "pitchouts." To avoid trouble, on this account, large pillars should be left to protect the surface at such points and only entries and air-courses driven through them. These should be strongly timbered or concreted where water seeps through the roof. My experience suggests that it would be well to prospect such places by drillholes, to ascertain the actual thickness of the rock overlying the coal.

When mining in Alberta, some years ago, we ran into the bed of the "Old Man River," although the entry we were driving was supposed to be 500 ft. below the surface. We had kept drillholes ahead in the coal, and the face of the entry was 200 ft. ahead of where the water broke in. It was found, later, that the strata had been eroded to within 18 in. of the coal, at the point where the break occurred. The hole was not more than 2 ft. in diameter and must have been the bottom of a pothole, which extended to the river bed on the surface. Such occurrences cannot be said to be uncommon in coal mining, and every precaution should be taken to avoid disaster when working under such conditions.

Cassidy, B. C., Canada. J. W. Powell.

Hindrances to Coal Production

Letter No. 2—With increasing interest I have read the numerous articles, appearing from time to time in *Coal Age*, relating to the production of coal and its hindrances. The subject is of vital importance, particularly at this time when the nation is facing the necessity of supplying the abnormal demand growing out of war-time manufacturing and the increased activities of the Navy.

England is now facing a coal shortage and hundreds of her ships that, in former years, sailed for South America laden with coal, now sail in ballast. The result is that our sister country, lying to the south, is looking to us for fuel. In our own ports, a multitude of bottoms used in the export of coal are idly waiting for their cargo.

Let me ask, What are the factors that hinder the production of coal? Is it a single factor; is it the miner; or is the operator to blame? Volumes have

been written on the car shortage and hundreds of complaints have been hurled at the railroads; but the situation in that respect has greatly improved and, today, observation in the coal regions shows that the car supply at the mines is now rarely to blame for the mine not running to its full capacity. My belief is that a large percentage of mines fail to load their allotment of cars, day after day.

Reasons for Low Tonnage Production

Look now at the miner, and we find that the weigh-sheet on any tipple shows that while some men load 15, 18 and even 20 tons of coal a day, the same sheet records but 6, 8 and 10 tons for other men. Following up these numbers, it is seen that their low tonnage is nothing unusual but a daily occurrence. Practical mining men know that there are many reasons for this great variation in tonnage among the men. There are, of course, some slackers who spend their time visiting other places and talking instead of working. There are others that are working under unfavorable conditions, bad roof, water at the face, or the coal is not cut regularly, etc.

A more important reason for low tonnage, however, is one for which the miner is not to blame, but the company who often fail to provide adequate equipment. There is an insufficient supply of mine cars, mules or gathering motors; or the haulage system is not sufficient to haul all the coal to the tipple as it is mined. In some cases, preference is given, in car distribution, to places that the company is desirous of developing more rapidly, with the result that the miners in other places are short of cars and must wait.

It is true there is a labor shortage at many mines, but it cannot be denied that days when the car supply is ample many mines fail to produce a fair average tonnage for the men that are actually on the job. There are notable exceptions to this, but failures are sufficiently numerous to establish the rule.

Summarizing the Situation

By way of summing up the situation, let me say that there are, to my mind, three factors to be considered, each of which must be brought to the highest point of efficiency, in order to secure a maximum coal production. There is no question that the large majority of coal operators are most loyal to American principles and ideals. The same is true of the large majority of miners who are among the most loyal of American citizens.

However, among the operators and the miners, alike, there are some who are not loyal. There are operators who fail to provide the most up-to-date or even adequate equipment for the working of their mines to full capacity. There are miners who do not devote the entire working day to the getting out of coal.

Of the railroads, it may be said that, notwithstanding the immeasurable improvements made under the Railroad Administration, the work can still be speeded up and the car supply made better and more constant. The Administration will, I believe, put forth every effort to do this. By accelerating the movement of coal trains, both loaded and empty, and equalizing the distribution of cars, the railroads will put the responsibility for coal production up to the operators. Again, by improving their equipment and systematizing the work underground, the operators will shift the burden of responsibility onto the miners, who must see to it that there are no 6- or 8-ton days to their credit when the conditions are such that a man can load 12, 15 or 20 tons in a single shift.

In closing, permit me to say, let there be less of "passing the buck." Let the operator, the miner and the railroads look to their own share of the work, shoulder their own responsibilities and be less disposed to lay the blame on the other fellow when the fault is their own. The carrying out of this program would result in a production of coal that would far surpass the wildest dreams, and our boys "over there" would know that their comrades "over here" are behind them, while the world would look to us with joy, as coal producers and not buck passers, and there would be no coal shortage the coming winter. OBSERVER.

Huntington, W. Va.

The Miner and His Pleasure

Letter No. 3—I read with much pleasure the two letters on this subject, written by Thomas Hogarth and Joseph R. Thomas, which appeared in *Coal Age*, Aug. 15, p. 329, and Sept. 5, p. 463, respectively. Like them, I feel that if any man living is entitled to pleasure, it is the coal miner. He is the only workman under the sun who must perform his work in darkness shut out from the light of day. For this reason alone, he should be permitted to enjoy himself in his spare hours.

For the past seven years, I have been foreman of mines and have seen many of the difficulties connected with mining. Like Mr. Thomas, who compares conditions in two mining camps that are as different from each other as light from darkness, I would like to draw a similar comparison between two thriving mining towns or camps in Indiana County, Pennsylvania.

In the first of these towns, the miners were privileged to own their own homes where they lived and brought up their children. The company who employed them gave them every encouragement in this direction. They supplied everything in the way of sports and recreation that the miner could ask. There were baseball, football and basketball teams. There were also provided a good theater, dance hall and lodge rooms. The town was kept clean and healthy; there were good roads well drained, and sidewalks. This place never knew what scarcity of labor was, because it got skilled workmen; and when these moved in, they stayed, some of them for life.

A Striking Contrast

As a contrast to this condition so favorable to the miner, let me describe another town in the same county. This was a company town. Everything was owned and operated by the company wholly in their own interests. No one could buy enough ground to erect a chicken coop. The miners worked early and late and there were no sports or pastimes to while away the idle hours. It is not surprising that a lower grade of men were attracted to this mine, and that the saloon was the chief resort when the men were out of the mine. When labor became scarce, this place was the hardest

hit of any town in Indiana County and it is easy to imagine why.

Before closing, I want to mention another town where everything is provided in the line of amusement and recreation that could be desired, and yet men are very scarce. Even those who are there do not work steadily, for some reason or other; perhaps someone can tell. The men have every convenience at home, fairly good working conditions and everything to make life worth the living. Still, few of the men work steadily.

For the purpose of showing the loss to this place and to the coal industry, owing to unsteady work, I will quote a few figures showing the number of days worked and the number of days idle during the months of June and July, in one of Johnstown's largest mines.

	Days Worked	Days Idle
Section 1	5,410	590
" 2	2,100	200
" 3	3,775	327
" 4	6,235	735
" 5	3,972	403
	21,492	2,255

The table shows a loss of 2255 working days out of a total of 23,747 possible workdays, which is one idle day out of every 10½ days that the men should have been at work. As these men average 4½ tons of coal per man, the idle time means a loss of 10,147 tons of coal in two months. I hope that someone will be able to suggest how to overcome such conditions, which are a menace to the safe prosecution of the war.

Johnstown, Penn. FAIRPLAY.

Americanizing the Foreigner

Letter No. 4—I read with interest the observations of "Experience," on the subject of Americanizing the foreigner, *Coal Age*, Aug. 8, p. 286. He sizes the situation up as a hopeless one; but it is my belief that, in the last few years, much progress has been made in raising the social standard of the foreigner employed in this country. Why should it be a hopeless task to engender American ideas into these foreign workers. The same might be claimed in respect to a large number of our own people who need to be Americanized as much, in some cases, as the foreigner.

Of course, nearly all of us are prone to resent any radical change in our lives and habits, and we refuse the guiding hand that would assume to bring about such changes. Nevertheless, every day makes it more and more evident that the foreign classes employed in our mining districts are slowly but surely becoming Americanized and possessed of higher ideals than were theirs in the old country.

What Are American Standards?

Before going further, let me ask, What constitutes Americanizing the foreigner. It may be impossible for him to speak our language fluently. The foreign-born American, even though bred in England, can hardly assume to give the same inflection and speak with the same fluency as the American born.

What then? Is the standard to be set by the number of automobiles, player pianos, talking machines or similar evidences of wealth on the part of their owners? In this respect, the foreigner is certainly keeping pace with the Americans.

Again, in respect to patriotism and loyalty, we find that the foreigner is a heavy investor in Liberty Bonds and War Savings Stamps, which is an evidence of their thrift; while it cannot be said that thrift is the characteristic of the majority of Americans. But, no one will deny that, at the present time, the most American and patriotic thing to do is to exercise thrift, notwithstanding so many Americans are failing in this respect.

Mention has been made of the foreigner's habit of raising hogs in the cellar, stabling cows under the house or keeping chickens in the same house in which the family lives. It should not be a difficult matter for the management of a company to set their foot firmly down on these sort of practices and segregate the human from that which is purely animal. There are, moreover, instances where the American born have been found just as lax in the sanitation of his dwelling as the foreigner.

The Foreigner and the Liquor Question

In my opinion, booze and the overcrowding of boarding houses are as responsible as anything else for the slow social progress of the foreigner. Where his appetite for intoxicating drinks is allowed to run unchecked, he has neither time, money or inclination for improving his social condition. Prohibition and bone-dry laws do not frighten him; for where he is able to procure sugar there are a thousand and one ways in which he can brew his drink and the result is just as effective and potent as the alcoholic drinks that prohibition has outlawed.

The foreigner is very resourceful in manufacturing his own drinks and some of these are brewed and fermented in an incredibly short time. Those people are known to brew a beverage from raisins, sugar, cornmeal and rain water, which is allowed to ferment nine days and the result is what is called by them "Old Hen," because of the short time it is required to "set."

Use of Sugar To Make Intoxicating Drink

So long as unscrupulous and unpatriotic merchants are permitted to sell these foreigners large quantities of sugar, they will continue to make their own drinks. Whether sugar necessarily enters the composition of all intoxicating drinks matters not, but it is a quick ferment and this misuse of sugar by the foreigner works an unnecessary hardship on the American who is restricted to two pounds a month for his individual use.

Another un-American mode of life is the typical foreign boarding house. A dwelling intended to wholesomely accommodate a family of four, five or six, is sometimes assumed to have double or even treble that capacity to hold foreign boarders. Such an overcrowded condition cannot fail to breed sickness, drunkenness and discontent.

It would seem that such a condition, also, could be remedied by the establishment of club boarding houses. It might not be possible for a boarding house boss to realize the same profit, and let me say here that the boarding boss in most instances is a very important personage of leisure and will compare well with the feudal landlord of the old country. But, the establishment of a club boarding house operated and controlled by the company would develop better citizenship.

Thomas, W. Va. W. H. NOONE.

INQUIRIES OF GENERAL INTEREST

Estimating Power in Haulage

I am anxious to ascertain the general method of determining the horsepower of a mine motor capable of hauling trips of 25 cars under the following conditions: Length of haul from inside parting to tipple, 3000 ft.; maximum grade, 2 per cent., against the loads; weight of empty car 1200 lb.; capacity, 3200 lb. of coal. The required output is 1000 tons a day of 8 hr. All supplies, rock and refuse to be handled on the night shift.

———, Ill. MINE ENGINEER.

It is necessary to first estimate the weight of loaded trip, track and grade resistance, required weight of motor, assuming a tractive effort of, say one-sixth of the weight on the drivers and the efficiency of motors as 90 per cent. The required power is then determined by the product of the tractive effort, speed of hauling and efficiency of the motors. Thus,

Weight of loaded trip

$$25\ (3200 + 1200) \div 2000 = 40 \text{ tons.}$$

Assume roller-bearing cars, track resistance 20 lb. per ton, grade resistance for 2 per cent. grade being 40 lb. per ton, total resistance of moving trip is $20 + 40 = 60$ lb. per ton.

Now, call weight of locomotive resting on drivers W_m, in tons, the tractive effort is $\frac{1}{16}$ $(2000\ W_m)$ = say $320\ W_m$. The weight of trip and motor is $(W_m + 40)$, in tons. Then, since the tractive effort of the locomotive must, at least, be equal to the entire resistance of moving trip and motor

$$320\ W_m = 60\ (W_m + 40); \text{ and } W_m = \frac{60 \times 40}{320 - 60}$$

$$= 9 +, \text{ say 10 tons.}$$

Number of round trips, in 8-hr. day, $1000 \div 40 = 25$; time required per trip $(8 \times 60) \div 25 = 19.2$ min. Allowing time for change of trip, assume actual time of hauling is 12 min., which gives for speed of hauling $(2 \times 3000) \div 12 = 500$ ft. per min.

$$\text{Power required } \frac{10 \times 320 \times 500}{0.90 \times 33.000} = 53.87, \text{ say 60 hp.}$$

Iron vs. Wood Mine Cars

I very much desire to learn the general opinion of practical mining men in regard to the relative advantages of iron and wood for the construction of mine cars, and to ascertain which of these two types of cars is generally preferable.

In mining, as in other industries, the use of iron is rapidly superseding that of wood for many purposes; but, for some reason, iron mine cars have not been generally adopted. The reason for this must lie in the fact that they have not been found wholly adapted to the haulage of coal underground. It cannot be assumed that mining engineers, who have been so quick to recognize the great advantage in the use of cement in mining work, prefer to build wood mine cars instead of iron, without having good reasons for their choice.

It is true that wood is cheaper than iron, but it should be remembered that when worn with use what remains must be thrown aside as having no value. On the other hand, old iron thrown on the scrap heap still has a value, as it can be smelted and used again. Thus, the value of scrap iron helps to balance the increased cost of the original material over wood.

Notwithstanding the fact that iron is stronger than wood, in the ratio of about 10:1, the weight of iron cars is much greater than that of wooden ones of equal capacity; and it cannot be denied that this feature, alone, is an important item in the handling of cars in the mine, both at the working face and on steep grades on haulage roads. A derailed iron car is far more difficult to replace on the tracks than a wooden one. Also, the ratio of dead to live loads is greater when hauling a trip of iron cars than where the cars are made of wood.

To balance these disadvantages, let me suggest that the longer life of iron cars will go far to offset the expense of maintenance of wooden ones. Also, manufacturers of iron mine cars are giving much attention to improve their designs and reduce the weight, for the same capacity of car, so that the question of greater weight is not now as important a feature as formerly. The fact that it will cost more to restore a badly damaged iron car than to repair a wooden one is a matter requiring the attention of mine officials, since the damage to cars is largely the result of unnecessarily rough usage; failure to maintain good tracks; and the employment of incompetent motormen.

I hope to see this question thoroughly discussed, with a view to ascertain what has been the experience of mine officials who have used iron cars in their mines. In stating the results in practice, we should be careful to name the conditions existing in the mines and affecting the haulage of coal, in order to arrive at an intelligent comparison that will be of value.

Wylam, Ala. GEORGE HUSBAND.

Coal Age is glad to second the suggestion of this correspondent and to ask for an expression of views, from its practical readers, in regard to the relative utility of iron and wood cars, in coal-mining practice. As shown in this inquiry, there are arguments for and against the use of iron cars in coal mining. There are mines operating with iron cars and getting good results from their use; and no one understands better the resulting advantages and disadvantages than the mine foreman who has had to overcome the difficulties presented, in order to benefit by the change.

The suggestion of our correspondent that the conditions surrounding the use of cars in the mine should always be described is an important one. Iron cars may prove advantageous in one mine and an utter failure in another.

EXAMINATION QUESTIONS

West Virginia Examination (1918), Mine Foremen and Firebosses

(Selected Questions)

Ques.—What is ventilation, and why is it necessary in coal mines?

Ans.—The ventilation of a mine requires the maintaining of a sufficient quantity of air, in circulation throughout the workings, to keep them in a healthful and safe condition. For that purpose, the air current must be conducted through the several passages of the mine, and made to sweep the working faces and all void and abandoned places where gas will accumulate. The ventilation of a mine is necessary in order to insure the safety and health of the workmen employed underground, and prevent the damage or destruction that would result if gases were allowed to accumulate and an explosion should take place.

Ques.—Explain the safest and most effective way of circulating air through mines.

Ans.—The means employed to circulate air currents in mines should be independent of natural conditions in the atmosphere. In other words, reliance should not be placed on natural ventilation, which is dependent on the difference of temperature in the upcast and downcast shafts, or the pressure of surface winds, or the fall of water in a shaft. Likewise, dependence should not be placed on furnace ventilation, which would be unsafe should the generation of gas in the mine develop. The safest and most effective means of ventilation, in mining practice, is a centrifugal fan of sufficient capacity to pass a required quantity of air, against a water gage not exceeding 2 inches.

Ques.—Is it safe to pass a current of intake air through the abandoned portions of a mine and then conduct it to the faces of the workings? State your reasons.

Ans.—Such a practice would be very unsafe. An air current that has passed through abandoned workings should be conducted directly into the return airway and carried out of the mine, without being permitted to enter any of the workings, because of the danger that it has absorbed poisonous or inflammable or explosive gases, which would render the working places either unhealthy or unsafe for work. The men might be overcome by breathing noxious gases, or an explosion might occur from gas being ignited on any one of their lamps.

Ques.—What are the legal requirements regarding old and abandoned workings, mine maps and second openings?

Ans.—The mining law of West Virginia (Sec. 27) requires all abandoned parts of mines to be safeguarded in a manner that will prevent, as far as practicable, the accumulation of gas therein and the entrance of persons unwarned.

Sec. 15 requires the operator or agent of every coal mine to provide an accurate map of the mine, drawn to a scale of 100, 200 or 300 ft. to the inch. The map must show all openings, shafts, slopes, entries and airways, and the direction of the air currents must be indicated by arrows. All rooms, pillars and abandoned workings must be accurately shown on the map, together with the property lines and outcroppings of the coal, within a thousand feet of any part of the workings of the mine.

A true copy of the map must be sent to the mine inspector of the district, to be kept in his office for reference, but not to be copied by anyone without the consent of the owner or operator of the mine. A copy of the map must also be kept at the office of the mine and available, at all reasonable times, for the examination of the inspector. The law requires the surveying of the mine twice each year and the extension of the map in accordance with such surveys. The map must contain the certificate of the engineer, acknowledged by a notary or justice of the peace.

Sec. 31 forbids anyone to work in a mine, unless it has at least two openings or outlets in each seam, such openings to be not less than 300 ft. apart, in the case of shafts, and not less than 50 ft. apart, in the case of slopes or drifts. This law applies to all shaft openings made subsequent to the passage of the act. Each opening must be reached by an available roadway that is well drained and kept free of any obstruction that would prevent the travel of men, in case of necessity. Each opening must be fitted with stairs or hoisting machinery, which must be kept in order ready for immediate use when required. In addition to the regular hoisting apparatus, the hoisting shaft must be equipped with an emergency windlass or other hoisting device of ample strength for hoisting men, as aproved by the Department of Mines.

Ques.—What would be the minimum amount of air required in a split where 60 persons and 10 mules are employed?

Ans.—The state mining law (Sec. 17) requires the circulation of at least 100 cu.ft. of air per min., for each person employed in the mine, and as much more as the district mine inspector may require. No mention is made of the amount of air required for the mules; but the inspector may follow the practice in other states, which requires 500 or 600 cu.ft. per min., for each mule underground. In that case, assuming that the mine is generating no gas, the quantity of air required for 60 persons and 10 mules would be $60 \times 100 + 10 \times 500 = 11{,}000$ cu.ft. per minute.

Sec. 26 of the law requires the circulation of 150 cu.ft. per min., for each man employed in a mine generating gas or where gas may be expected in the future development of the mine. In that case, the quantity of air required, in the same instance, would be $60 \times 150 + 10 \times 600 = 15{,}000$ cu.ft. per minute.

COAL AND COKE NEWS

Harrisburg, Penn.

The production in the Pittsburgh district of a considerable quantity of dirty coal is causing the Fuel Administration to condemn several carloads of such coal weekly. When condemned the fuel must be sold at 50c. per ton less than the prices fixed by the Government. Much of the dirty coal, it is said, is being produced from wagon mines and stripping operations. The coal from the stripping mine, it is claimed, has been taken from too close to the surface to be of much heat value, and it is contended it is useless to waste freight cars in hauling it.

Fuel administrators are urging upon operators, dealers and consumers of coal the necessity of unloading coal from cars promptly. Operators are urged to place upon coal cars at the time of loading such warnings as the following: "Unload this car of coal promptly if you want it returned to you promptly." "The miners are waiting for this car. Unload it quickly." The notices state that it is not so much the shortage of cars that is causing a shortage of coal as it is the tying up of cars by receivers of coal failing to unload the coal from the cars promptly.

T. Ellsworth Davies, consulting mining engineer of Lackawanna County, has been employed by the County Commissioners to make a survey of coal lands in Dauphin County. He will do this with a view of establishing more just assessments for taxation purposes. Mr. Davies will begin the survey with a corps of assistants and an office force and will make monthly reports to the commissioners. The survey will include a physical examination of the coal deposits and Mr. Davies expects to produce data which will warrant a great increase over the present assessment rates in the upper part of the county.

Uniontown, Penn.

By direction of Fuel Administrator H. A. Garfield, the salvaging of coke screenings from abandoned ash dumps was discontinued Monday, Sept. 16. While the order sets forth that the action was taken because "there is a shortage of labor in the beehive coke district and that the labor employed in reclaiming old breeze dumps at beehive coke plants can be more effectively employed in the production of coke needed in the war industries, and that the elimination of this work will appreciably relieve the over-burdened railroad transportation facilities," local operators see in the order another result of the recent coke inspection system established with R. C. Glazier as its chief.

The coke breeze industry in the Connellsville region had reached such proportions that it demanded an average of 15 cars daily. It has grown so rapidly since the present fuel emergency that some time ago it was recognized by the fuel administration as a byproduct of the coke region with the fixing of basic prices ranging from $7.30 for the highest quality down to $3 per ton for ordinary coke breeze.

With the official banning order it became known that for some time past an investigation has been in progress to determine the facts as regards the quality of the breeze shipped from the region. Operators who from the start did not favor the working over of the ash dumps claimed that its theory of conservation and turning a liability into an asset was its principal argument. They claim that it has not met the acid test of practical application for the reason that it may be assumed that coke operators conduct some supervision over their dumps to cut down the fuel wastage.

Charleston, W. Va.

Cars in the Fairmont district were somewhat more plentiful this week and last week than was the case at the beginning of September, but it is still contended by operators that much of the supply exists principally on paper and that figures given out do not really represent the actual supply. In fact production committees assert that the supply is still insufficient insofar as enabling the mines to make any record in loading coal. However, it is so much better on the average than it has been that coal men are hopeful that within a few weeks the highwater mark of July may be reached. As indicated in last week's correspondence, no difficulty was experienced by the mines in Randolph County which are supplied by the Western Maryland, but much of the fuel shipped on that road is for railroad use. Late placing of cars continues to restrict the output in the Fairmont region.

Little complaint is heard from the Guyan and Kenova-Thacker districts, where the transportation facilities are nearly up to the requirements of the mines, a 100 per cent. car supply having been promised by the railroads. Mines in the Guyan region are supplied principally by the Chesapeake & Ohio Ry., and that road has succeeded in improving its supply for the New River and Winding Gulf regions as well as in the Guyan region.

There has been a material increase in the total net tons of coal produced in the Pocohontas and Tug River districts during the past week over the week previous. The number of hours lost owing to car shortage was reduced from 678 to 110. The tons lost because of car shortage amount to only 10,469. Last week the car shortage caused operators to feel apprehensive, but the improvement has brought a good deal of encouragement. With more cars on hand and with the number of hours worked increased by 246, production went forward and at the same time the total tonnage lost was reduced by 37,264 tons. The total tonnage produced was 438,524, requiring 7217 working hours. From all causes 55,573 tons were lost due to all causes. Labor shortage was responsible for the loss of 39,858 tons. Production committees in the Tug River and Pocahontas districts feel that the output can be materially increased and every effort is being directed to that end. Coke output in the districts named shows an upward trend, the production being 49,129 tons.

In the Kanawha coal fields there has been a steady increase in production since the close of August. A large gain was made even with Labor Day lost, or virtually lost, and since that date there has been a steady increase in production, made possible by approximately a 100 per cent. car supply. Like conditions prevail in the New River and Winding Gulf Districts, where with improved transportation facilities the mines have been able to produce much more coal. Results have also been achieved in these two districts through an elaborate production organization. As car supply and increased effort on the part of the miners go hand in hand, and as this has been pretty well worked out in the New River and Winding Gulf sections, the increase in output has been most marked.

Birmingham, Ala.

Lagging output is still reported by the coal mines of the Birmingham District, caused mainly by the inability of the railroads to give all the service asked for. Labor is not so efficient as it might be, as many employees of the mines do not apply as much time as they might to their tasks. There is belief, however, that when the Warrior River barge line is placed in operation, which is promised by M. J. Sanders, director of the transportation system, within two weeks some relief will be afforded the railroads in the coal-mining sections, especially in the western part of Jefferson County, and near the edge of Walker. The cars released by the placing in operation of the Warrior barge line will be used in other directions.

Coal production in Alabama for the week ending Sept. 7 showed some improvement over the previous week, the output being 382,939 tons compared with 390,412 tons for the last week in August. For the week ending Sept. 14, figures for which are not yet complete, it is believed the 400,000 mark has been passed, on the face of available reports, though the loss of production at Lewisburg is being felt, and rail service has not been normal during the past week. To bring production up to last year's figures it will be necessary for the mines to record an output of 420,000 tons or more per week.

Victoria, B. C.

Sixteen miners lost their lives on the morning of Tuesday, Sept. 10, when the cage in which they were descending the Protection Island shaft of the Canadian Western Fuel Co.'s mine, at Nanaimo, B. C., became detached from its cable and fell a distance of approximately 300 ft. The cage had raised all the men of the night shift to the surface and carried six loads of 16 down when the accident happened. It had scarcely left on its seventh trip when the cable parted, the miners still waiting their turn being informed of what had taken place by seeing the parted cable, released of its load, swinging loose in the shaft. Subsequently it developed that the safety locks had failed to act and that the cage had struck the loading landing, constructed of 12-in. timbers, with such force that it went through, finally resting 50 ft. lower on an abandoned level not used since the upper seam was opened some years ago. This is the most serious coal mine disaster that has occurred in British Columbia since early in the month of April, 1917, when 34 miners lost their lives in an explosion at the Coal Creek Mines, Crows Nest Pass Colliery, Fernie, B. C. Hon. William Sloan, minister of mines, has promised that the fullest investigation will be made in order that the responsibility may be fixed.

Elmonton, Alta.

An active campaign is in progress to induce coal dealers and consumers to use Alberta coal instead of withholding orders in the expectation of being able to procure anthracite. A statement is published by John T. Stirling, chief inspector of mines for Alberta, showing that the demands of the Western Provinces could easily be supplied by Alberta provided the orders were forthcoming. The amount of coal produced in that province in 1917 was 4,863,414 tons, exceeding the output of 1916 by 214,810 tons, notwithstanding labor troubles and lack of transportation facilities. If the mines had worked steadily throughout the year, with the present labor employed, the amount produced would have been approximately 8,000,000 tons, or more than 3,000,000 tons more than the amount actually produced. Over 3,000,000 tons imported from the United States are annually consumed in Manitoba and Saskatchewan, which should be entirely supplied from the production of Alberta mines, which could also supply a portion of the United States immediately south of the border.

The statement has been made that Alberta coal will not store, which while it may be true to a certain extent as regards 25 or 30 per cent. of the output, is not true of the other 70 or 75 per cent. Mr. Stirling says it is not reasonable to expect that while the United States is shutting down her industries to a minimum she will continue to supply coal to Western Canada when there is a supply at hand more than sufficient to cover all demands. It is not to be expected that American manufacturers will submit quietly to coal being exported to Canada, while their own industries are idle for days at a time for lack of fuel. The greatest demand comes in the fall and winter, at a time when the difficulties of operation are greatest owing to scarcity of labor and lack of railway facilities. In January, 1917, 8550 men were employed in connection with mining in Alberta. While in June the number was reduced to 3091 and again increased to 9812 in December, while overhead charges ran on just the same, causing a considerable loss. No industry can be built up in this manner on a permanent basis and it remains for some authority to institute some system to utilize the enormous force now going to waste.

PENNSYLVANIA

Anthracite

Mahanoy City—Officials of the Lehigh Valley Railroad Co. have received orders to make a canvass of every industrial plant in the region and urge owners to store coal for next winter as a matter of self-protection.

Hazleton—Under the increased demand for coal, and with prospects of receiving another wage advance, more men are applying for certificates as qualified miners than has been the case in many years. The examiners report a large increase in the number taking tests.

Georgetown—Carpenters of the Lehigh & Wilkes-Barre Coal Co., under the direction of Harry Mason, are contributing several hundred dollars' worth of work necessary to alterations of cupboards and equipment of the Red Cross workrooms. Several lumber firms have donated the lumber and the coal company men are doing this work at night after completing their day's work in the mines.

Wilkes Barre—In order to increase the output of coal and to stop illegal selling of liquor on Sunday, which, he contends is keeping miners from reporting for work on Monday mornings, A. C. Campbell, fuel administrator for Luzerne County, has filed proceedings in court to have the licenses of saloon dealers in Wilkes-Barre, West Wyoming, Plymouth and Exeter revoked. In all nine saloons have been attacked.

Upper Lehigh—M. S. Kemmerer, president of the Sandy Run Coal Co. and Upper Lehigh Coal Co., has offered the Government his mansion and the large Upper Lehigh Hotel for a hospital for wounded and convalescent soldiers. The Kemmerer property has probably the most elaborate gardens of any dwelling in the coal region. Thousands of dollars are spent annually in keeping them in shape and expensive shrubbery was imported from China, Japan and the Himalayas. Years ago Upper Lehigh's hotel was a health resort and was the scene of many social fetes.

Hazleton—Copies of the proclamation of President Wilson calling upon miners to accept deferred classification and maintain coal production were posted at all the Lehigh Valley Coal Co. collieries on Sept. 16. The loss due to enlistments in coal-mining towns was shown when Andrew Skurko was called to the colors from Beaver Brook, making the fiftieth boy who has been called out of a population of 650 persons. This is one out of every 13 residents. Sandy Run miners who tied up the mines there when their demands for transportation was refused are moving to other anthracite operations, but the colliery is working shorthanded.

Pittston—The court has sustained the claim of Dora A. Coleman and others against the Reliance Coal Co., and a rule for judgment on ejectment proceedings was sustained. The suit arose over a coal lease made by the late Isaac B. Felts to Theodore Hogan in 1906. The latter assigned his interest to the Reliance Coal Co. The lease provided for a minimum monthly royalty of $700 and the plaintiffs allege that no rent or royalty was ever paid since May, 1907. The defense was that faults were found which prevented mining, and Mr. Felts, before his death, had agreed to provide a suitable surface area from which the coal could be removed, but this was never done. The court holds that the coal company was lax in not endeavoring to remove the coal within a period of 11 years.

Bituminous

Pittsburgh—On Sept. 12 the portion of the tipple of the Ella mine of the United Coal Corporation spanning the two main tracks of the Pittsburgh & Lake Erie R. R. collapsed and fell, putting the mine out of business. A new tipple had already been planned parallel to the old one, most of the material was on the ground and part of the foundations built. A large force was immediately assembled and the erection of the new tipple started, and by Sept. 19 the railroad loading portion was sufficiently near completion to begin loading coal. The structure and conveyor for loading on the Monongahela River will be completed in about 45 days. The conveying machinery will be furnished and installed by the Roberts & Shaefer Co. of Chicago, Ill. No one was seriously injured in the collapse, though three of the tipple men fell with the span. The checkweighman had a narrow escape, however, and it took an hour and a half to dig him out of the wreckage; and then it was necessary to amputate his two wooden legs to extricate him.

WEST VIRGINIA

Morgantown—The plant and holdings of the Quality Cement Co. have been purchased by the Consumers' Coal Co., of Pittsburgh. The capacity of the plant is about 2500 tons a day. Charles Hout is the superintendent in charge.

The Sarepi Coal Co., which operates in the Red Stone seam, has completed construction work on a new tipple, new houses for miners and has just installed new equipment. F. J. Ice is the superintendent in charge.

By Nov. 1 the Clinton Coal Co., of whose plant J. S. Griffiths is general manager, expects to begin the shipment of coal. Construction work on a modern tipple has just been completed.

The Randall Coal Co., which has been operating a wagon mine, has converted its plant and with the installation of up-to-date machinery and the construction of a tipple has materially increased its capacity, now loading direct into cars. The company has also built a number of miners' houses. H. J. Elkridge is the superintendent of the company's plant.

The large Empire, or Davis, tract of coal in Monongalia County will be developed through the construction of 30 miles of railroad, to be known as the Indian Creek & Northern R.R., in the Indian Creek district of the county. The railroad will run from a point at the mouth of Indian Creek, connecting with Monongahela Ry., extending eastward along Indian Creek to Jake's Run, from that point to Dunkirk Creek and to Blacksville, Penn. The first mile of railroad will reach the first opening of the New England Fuel & Transportation Co. in the Empire tract, where the company will ship upon the completion of the plant there about 40 cars a day. According to present plans the first mile of railroad will be ready for operation by Dec. 1, construction work already having been begun.

Elkins—Since last March the Davis-Copen Coal Co., formerly the McCaa Coal Co., which has a large operation at Gilmer on the Coal & Coke Ry., has been engaged in trying to get its mines in shape for operation. At that time the Elk River rose 40 ft., completely flooding the mines and making the production of coal impossible during the summer. Pumps have been at work, therefore, for six months, clearing the mines of water. The mines are in workable shape now and about 65 men are at work. The company could use more men, but is unable to obtain them. As a precautionary measure and in order to guard against a recurrence of what happened last spring, the Davis-Copen Coal Co. has arranged for water locks so that there will be no further flooding of the mines. This company is headed by John T. Davis, of Elkins.

Madison—The shipment of coal from the plant of Mordue Collieries Co. has been begun. The opening of this operation represents nine months of construction work, ground for the plant having been broken early in December, 1917. The plant now in operation represents an expenditure of approximately $400,000. Since construction work was started six miles of railroad have been built, together with two miles of tramroad, and 100 miners' dwellings have been made ready for occupancy. Coal at the present time is being taken from two gas coal veins, one 5 ft. thick and the other 6 ft. thick. The company, however, expects to have its largest operation in the Dorothy vein, which runs from 10 to 14 ft. in thickness. When the plant is in full operation coal will be taken from seven different mines, giving the company a capacity eventually of 3500 tons a day.

OHIO

Straitsville—The new tipple at the Central mine of the Hocking Valley Products Co., replacing the one destroyed by fire July 13, has been completed and operations have been resumed. The mine is operated by the Hocking Block Coal Co.

ILLINOIS

Carlinville—Articles of incorporation for the Carlinville Coal Co. have been filed in the recorder's office. The company is composed of local men. A shaft is being sunk to supply the local trade. It has reached a depth of 60 ft. It is planned to have the mine in operation by Thanksgiving Day.

Belleville—The Executive Committee of the Twelfth Illinois District, United Mine Workers, has directed Secretary-Treasurer Walter Nesbit to purchase $500,000 worth of Fourth Liberty Loan bonds. The district organization already owns $500,000 of the previous issues. All of the locals in the district have bought and more than 90 per cent. of the individual miners have become bondholders.

Duquoin—What is said to be the largest mine tipple in the world is being constructed over the main shaft of the new mine of the Union Colliery Co., of St. Louis, at the new town of Dowell, five miles south of here. Coal is already being mined and sent to St. Louis for the use of the Union Electric Light and Power Co., of which the Union Colliery Co. is a subsidiary company. The mine has been christened the Kathleen Colliery, in honor of Kathleen McAuliffe, daughter of Eugene McAuliffe, president of the colliery company.

Edwardsville—The coal production of Madison County for the past twelve months, according to the report of John J. Fletcher, of Collinsville, County Mine Inspector, was 5,184,525 tons, an increase of 140,802 tons over the preceding year. Production at the largest mines in the county decreased, as follows: New Staunton Coal Co., 110,688; Mt. Olive and Staunton Coal Co., 131,907; Donk Bros. No. 1, 48,196; Donk Bros. No. 2, 135,050. Mine No. 1 of the Mt. Olive and Staunton Coal Co., however, made an increase of 170,240 tons, which was the largest in the county. There are 4653 men and boys employed in the industry, an increase of 410. There were 14 fatal accidents and 177 non-fatal accidents in the county during the year.

KENTUCKY

Madisonville—After raging for several days, a bad fire in the Circle City Coal Co.'s mine at Circle City was finally placed under control, it becoming necessary to seal up the mine.

St. Charles—The St. Charles plant of the St. Bernard Coal Mining Co. was put out of commission for three days as a result of a break in the machinery. Heavy rains and cold weather have resulted in a falling off in the labor supply in the Madisonville district.

Wolf Coal—The Ruthanne Coal Co., a Kentucky corporation, has taken over 1580 acres from the Wolf Creek Coal Co. at this place. The company is loading three cars a day, and output will be increased. J. M. Moore, of Charleston, is president, and B. J. Hener, of Huntington, W. Va., is secretary.

Pikeville—After being imprisoned behind burning mine supports for several hours, seven miners in the Big Hollow Coal Co.'s plant were finally reached by a rescue party, some of the men being unconscious when found. The fire started 50 ft. from the ground, from a gasoline fan engine exhaust, communicating to wooden supports, while the trapped miners were 800 ft. back, and couldn't be reached. They had just fired a ten shot charge and had the smoke from these shots also to contend with. The fire was put out without much loss.

WASHINGTON

Spokane—Development work has been started at Valley, 48 miles from here, by the Colville Valley Coal Co. The deposit is a sub-bituminous coal in a vein 6½ ft. wide, well defined and continuous. A shaft is now down 165 ft. and the company expects to be making shipments in a short while. F. Weatherwax is president of the company and A. N. Cantril, of Spokane, is secretary-treasurer.

Foreign News

Vancouver, B. C.—Stefansson, the Arctic explorer, states that the expedition from which he has just returned found several new islands and made scientific explorations of the country around Coronation Gulf. He confirmed the reports that copper and coal were found by him in the North, stating that coal was discovered on nearly every island touched by the expedition and predicting that these deposits would some day be found of great value.

Ottawa, Can.—Charles A. Magrath, Canadian Fuel Controller, has been appointed director of coal operations for Nova Scotia and New Brunswick with wide powers. He is given authority to make all necessary investigation respecting wages, holidays, hours of labor, utilization of labor to the best advantage and all other matters connected with the cost and production of coal during the war and for three months after the end of the war. The price to be paid for coal and coke produced in Nova Scotia and New Brunswick is to be subject to his approval and he is empowered to take possession of any mine or mining plant in those provinces and carry on operations.

Personals

I. C. Irwin has resigned his position as sales manager of the Rutledge & Taylor Coal Co., of Chicago, Ill. The position of office sales manager of the company has been abolished.

W. E. Brandt, formerly with the Thompson Coal Co., of Chicago, Ill., and recently with the district representative of the Federal Fuel Administration, has joined the Rutledge & Taylor Co.'s forces in Chicago.

Joseph C. Trevonow, of Elizabeth, Penn., mine inspector for the United Coal Corporation, has been appointed to the superintendency of the Jerome mines. Mr. Trevonow's successor has not yet been named.

Frank B. Collins, of Columbia, Ohio, formerly with the General Hocking Fuel Co., has accepted the position of sales manager for the H. W. Jenkins Coal Co. He is a brother of T. C. Collins, secretary of the Ajax Block Coal Co.

John F. Reynolds, general inside foreman of the Twinn Colliery of the Lehigh Valley Coal Co., near Pittston, Penn., a mining man of repute, has taken a position with the Associated Companies of Pittsburgh, a compensation insurance corporation.

W. J. Armstrong, manager of the crushing and pulverizing sales department of the Jeffrey Manufacturing Co., Columbus, Ohio, has recently received an appointment as Captain in the United States Army and has been assigned to the Ordnance Department in Washington, D. C.

R. Horne Smith, a leading financier of Toronto and a member of the Toronto Harbor Commission, has been appointed Fuel Administrator for Ontario, succeeding R. C. Harris. He refused to accept any salary. E. L. Cousins, engineer of the Toronto Harbor Commission, will act as his deputy.

William H. Brown, of Jerome, Somerset County, Pennsylvania, superintendent of the Jerome mines of the United Coal Corporation, has resigned, effective Oct. 1, to accept the position of general superintendent of the twelve Sunday Creek mines of the George M. Jones Co., with headquarters at Glouster, Ohio.

Payne G. West has been appointed as assistant manager of field sales for the Lakewood Engineering Co., of Cleveland, Ohio. Mr. West is a graduate of Carroll College, class of 1901. He later studied civil engineering for two years at the University of Wisconsin. In 1907 he became associated with the T. L. Smith Co., of Milwaukee. During 12 years with this firm—most of which he was assistant sales manager—Mr. West thoroughly familiarized himself with all branches of the machinery field as well as with factory production methods.

Industrial News

Binghamton, N. Y.—The C. H. Peters Coal Co. has recently filed notice of the dissolution of the company.

Syracuse, N. Y.—Due to the recommendation of E. N. Trump, engineer for the Federal Fuel administration, a total of approximately 60,000 tons of coal will be saved by thirty plants in this section.

Montour Falls, N. Y.—A. J. Barnes has been appointed export manager of the Shepard Electric Crane and Hoist Co., with headquarters at Montour Falls, N. Y. Mr. Barnes will also continue to be director of publicity.

Birmingham, Ala.—The production of coal in the Birmingham district showed a slight increase for the week of Sept. 9 over the preceding week, a total of 392,939 tons being mined as against 390,413 of the former week.

Philadelphia, Penn.—The Pennsylvania Railroad Co. has awarded a contract to the Roberts & Schaefer Co., Chicago, Ill., for the construction of a new 1000-ton capacity reinforced-concrete automatic electric locomotive coaling station at Perryville, Md.

Baltimore, Md.—A recent report from Pittsburgh announcing that the Baltimore & Ohio R. R. would devote its entire freight traffic to the transportation of coal has been denied by officials of the company. It was added, however, that coal would be the heaviest tonnage transported.

McAlester, Okla.—The Oklahoma Coal Operators' Association at its regular annual meeting at McAlester reëlected officers as follows: R. T. Price, Muskogee, Okla., president; D. J. Jordan, Oklahoma City, vice-president; F. F. McGrave, McAlester, secretary and treasurer; J. B. Kerr, McAlester, commissioner.

Connellsville, Penn.—The Western Maryland Railway Co., Baltimore, Md., has awarded a contract to the Price Construction Co., Maryland Trust Building, Baltimore, for the erection of a new local coaling station at Powest Junction, near Connellsville. H. R. Pratt is engineer for the company.

San Francisco, Cal.—B. H. Tripp, special representative of the Chicago Pneumatic Tool Co. on the Pacific Coast, has succeeded M. W. Priseler as district manager of sales for the Pacific Coast territory. His headquarters are at 627 Howard St., San Francisco. The Los Angeles branch of the company at 521 Title Insurance Building comes under Mr. Tripp's jurisdiction.

Joplin, Mo.—The Lightning Creek Coal Co. was incorporated under the state laws of Missouri and articles filed in Carthage, Jasper County, on Sept. 9, with a capital stock of $12,000. The incorporators are John R. Griggs, Pittsburg, Kan.; P. E. Tabor, Joplin; Mabel M. Bash, Joplin, and M. R. Lively, Webb City, Mo. A plant will be erected on the property at Pittsburg in the near future.

Chicago, Ill.—In order to provide increased facilities for manufacturing the Pneumatic rotary dump and other mining specialties, the Wood Equipment Co. has recently purchased and equipped commodious shops at Grand Crossing, Chicago. The main offices will be located at that plant and the company will continue to maintain city offices in the McCormick Building, as well as branch offices in New York, Pittsburgh, Knoxville and Denver.

Pittsburgh, Penn.—Three hundred steel coal cars, which secret service officials say were built by the Orenstein-Arthur Koppel Co. for secret shipment to Germany by way of Mexico, will be sent to France for use in coal fields recaptured by the Allies. The Orenstein-Arthur Koppel Co.'s plant near here was sold at auction recently by A. Mitchell Palmer, alien enemy property custodian, to the Pressed Steel Car Co., which will build 2000 more cars for the Allies.

Buffalo, N. Y.—It is announced that the local manager of the mine of the new Buffalo-Kanawha Coal Corporation will be James T. Lightner, an engineer and stockholder, who lives at Charleston, W. Va., a short distance from the mine, which is located in the Campbell Creek valley. The coal will be taken by the Campbell Creek Coal Co. Shipment has begun with an output of nearly 200 tons daily. George A. Corson, elected manager, will not leave Buffalo.

Cincinnati, Ohio—Receipt of 40,000 tons of coal at this market was accomplished by the arrival on an artificial wave of the Ohio of sixteen tows of coal, with a total of 90 barges, all loaded to capacity. All this fuel was allotted to Cincinnati concerns and will be distributed on the local market. The Campbell's Creek Coal Co., the Hickey Transportation Co., the Otto Marmet Coal and Mining Co. and the Pittsburg Coal Co. were interested in the shipments received.

Toledo, Ohio—Increased activity at the docks of Toledo was shown during the week ending Sept. 14, indicating a better movement of coal to the Northwest. The Hocking Valley docks during the week loaded 207,166 tons as compared with 227,253 tons for the previous week, making a total of 3,297,000 tons for the season. The Toledo & Ohio Central docks during the same week loaded 92,000 tons as compared with 66,000 tons the previous week, making a total of 1,449,000 tons for the season.

New York, N. Y.—H. W. McMaster, general manager of the Wheeling & Lake Erie R. R. at Cleveland, has reported to A. H. Smith, Regional Director of Eastern Railroads in New York, that the steamer "Colonel J. M. Schoonmaker" was cleared from the docks of that railroad last Friday (Sept. 20) with a cargo of 14,767 tons of Pittsburgh No. 8 coal in addition to its own fuel, amounting to 406 tons. According to the Coal and Ore Exchange this is the largest cargo of coal loaded on the Great Lakes.

Henryetta, Okla.—S. M. Barrett, secretary of the State Vocational Education Board of Oklahoma, will immediately arrange for resuming summer school work in the mining districts of the state. Under the supervision of the State and Federal vocational boards, night schools will be reopened in the mining districts, particularly in the coal-mining districts. Instruction will be given in various branches, but special attention will be paid to instruction in mining. Such schools will be opened at Coalgate, Henryetta and McAlester.

Harrisburg, Penn.—Is a workman an industrial accident victim if the ankle of his right foot has been broken while at work—if that right foot was part of an artificial leg? A regularly executed accident report has been received at the State Compensation headquarters from the Boland Coal Co., mine operators at Dunmore, setting forth that James McGarry, an employee, turned on his foot and broke his ankle while at work Sept. 4. The accident report further states: "This is an artificial leg, however, but he had to have same repaired."

St. Louis, Mo.—St. Louis and Mississippi Valley shippers, at a conference Tuesday, Sept. 17, at the St. Louis Chamber of Commerce, voted to ask a 20 per cent. reduction in the river rate as compared to the rail rate. The position was taken that it would be unfair to charge full rates, as is done on the great lakes, until the service is equal to that on the lakes. Theodore Brent, traffic manager of the Mississippi and Warrior Waterways section of the Federal Railroad administration, announced that the operation of the barges would begin Sept. 28. He announced that coal rates will not warrant two handlings, one by water and the other by rail.

Clarksburg, W. Va.—Impetus was given to the production of coal from wagon mines by the operators of wagon coal mines in Harrison County this week when a number of such operators formed a temporary organization by electing L. E. Dorsey chairman and E. W. Bell, secretary. Mr. Dorsey is one of the incorporators of the Clarksburg Domestic Coal Co. The meeting was called for specific purpose of organizing the owners and operators of small mines not only that there might be more regularity in submitting reports to the Fuel Administrator, but also to demonstrate to the Fuel Administration that these same mines, looked down upon by so many, are producing a large quantity of coal when it is considered in bulk, even though such mines are operated for the most part by farmers and other persons.

New York, N. Y.—M. F. Burns, president of Burns Brothers, has again been appointed chairman of the special Liberty Loan Committee of the Coal Trade for the Fourth Liberty Loan campaign which opens on Sept. 28. The vice chairman is Harry Peters, of Williams & Peters, and the Wholesale Committee consists of J. F. Bermingham, president, Delaware, Lackawanna & Western Coal Co.; Gardner Pattison, of Pattison & Bowns; J. W. Whiteley, of Whitney & Kemmerer; James A. Hill, Knickerbocker Fuel Co.; George M. Dexter, Dexter & Carpenter, LeBaron S. Willard, Willard, Sutherland & Co., and Robert B. Baker, of Sterling Coal Co. Committees representing the retail trade have been appointed in each of the five boroughs. Charles S. Allen, secretary of the Wholesale Coal Trade Association, is the publicity manager.

Charleston, W. Va.—Accidents in West Virginia mines during the month of August resulted in the death of 41 men engaged in the industry. The largest number of deaths in any county or counties was nine, Logan and Raleigh counties each having that many. McDowell County was next with eight. As has nearly always been the case, falling coal, slate and roof was responsible for more deaths than any other cause, the number of such deaths for August having been 17. Mine cars caused the death of eight men within the mines, powder explosions killing two, electricity four, motors two and mining machine one, all of such deaths being within the mines. Outside the mines one man was killed under a mine car, three were killed in a powder explosion, one was electrocuted and two were killed from miscellaneous causes.

Sunbury, Penn.—The immense value of the millions of tons of coal deposited in Shamokin Creek as waste in years gone by was never better illustrated than in a law suit brought in the Northumberland County court in which a car of this anthracite is at issue. The claimants put its worth at $100, which makes the coal worth $2 a ton. Much of this coal is little larger than a pinhead, and smaller than a grain of rice. Thousands of tons are being taken from this stream daily, and 50 or more concerns are operating with a total of a half million dollars worth of equipment between Sunbury and Shamokin, a distance of 20 miles. Some of these "water miners" have cleared as high as $5000 on a single leasehold on abutting lands. Not more than ten years ago farmers were paid big sums for damages because coal was washed over their lands making it worthless for farming.

MARKET DEPARTMENT

Weekly Review

Coal Situation Dependent on Many Factors—An Increase in the Daily Coal Production Would Materially Aid War Program—Soft-Coal Output Improving—Demands for Fuel Increasing—Need for Conservation Emphasized—Trouble in Anthracite Region

CONJECTURES as to the outcome of the fuel situation are many, but only one gifted with infinite knowledge could prophesy with any degree of accuracy how the country will fare this winter with regard to its coal supply. The optimist points out that revised storage rules, modifications of zone restrictions, large stocks in the hands of consumers and an improved car supply at the mines are all happy auguries, while the pessimist shakes his head sadly as he compares the weekly tonnage figures with the estimated requirements. He heaves a sigh at the news of curtailments and labor troubles, and argues that the stress laid upon the need for rigid conservation is a certain indication of a stressful winter.

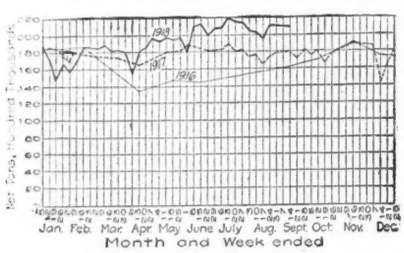
However, there is a happy medium—a middle course, as it were, between these two extremes. In spite of obstacles the output of soft coal has been maintained at the rate of 1,982,000 net tons a day for the period from Apr. 1 to Sept. 14. For the week ended Sept. 14 the tonnage mined reached 12,692,000 net tons, or 133,000 net tons greater than the daily average for the April to September period. An increase in the daily production for the rest of the coal year sufficient to wipe out the deficit of 13,624,000 net tons now existing would place the country at ease, so far as its soft coal supply is concerned. Conceding that this output is not possible—that transportation, inadequate man power and inclement weather will militate against maximum production—the soft coal mines should at least be able to maintain an average rate of production that would enable the successful carrying out of our war program.

The bituminous mines are indeed confronted with a stupendous task. Orders for munitions are piling up—and munitions mean coal. Translated into popular terms, one ton of coal is consumed in the manufacture of 27 three-inch shells. In the recent American drive at St. Mihiel alone approximately 1,500,000 shells were fired. Steel is only one of the many war industries dependent on coal, and when the demands of other war plants are totalled it can readily be seen why the line is being drawn more tightly around non-war industries, why production committees at the mines are doing all that is humanly possible to stimulate the miner to more regular working time and greater production, and why the Fuel Administration insists on the strictest sort of coal conservation.

During the week ended Sept. 14 the anthracite mines produced 2,088,000 net tons of coal, which brings the total output of hard coal for the coal year to date up to 46,566,736 net tons. After maintaining an enviable record for patriotism and production for months, the germ of discontent, fostered somewhat by union politics and Hun propaganda, infected about 30,000 hard-coal miners. These men struck for higher wages in the face of an existing agreement and the country's need, and as a consequence 26 collieries were forced to suspend operations. At this writing the critical aspects of the situation have passed, as the majority of those out on strike have returned to work while awaiting the decision of Fuel Administrator Garfield in regard to their plea for an increase in wage.

WEEKLY COAL PRODUCTION

Production of bituminous coal during the week ended Sept. 14, while considerably in excess of the week ended Sept. 7, due to the loss of time during that week on account of Labor Day, equaled the production during the week ended Aug. 31. Preliminary estimates place production during this week at 12,692,000 net tons, an increase over the week preceding of 13.2 per cent. and over the corresponding week of last year of 15.7 per cent. The average



daily production during the week ended Sept. 14 is estimated at 2,115,000 net tons, approximately the same as the daily average during the preceding week and considerably in excess of the daily average of 1,827,000 net tons during the week ended Sept. 14, 1917. The shortage for the coal year to date now amounts to 13,624,000 net tons and makes necessary an average daily production during the balance of the coal year of 2,379,000 net tons, or 2 per cent. in excess of the average daily production for the coal year to date.

Production of anthracite during the week of Sept. 14 is estimated at 2,088,000 net tons, 29.1 per cent. above the production of the preceding week, and 4 per cent. above the corresponding week of 1917. The daily average for the week of the 14th is estimated at 348,000 net tons against a daily average of 338,531 net tons for the coal year to date, and 334,290 net tons, the daily average for the corresponding period of 1917. Total production for the coal year to date is estimated at 47,733,000 net tons, an increase of 2.5 per cent. over the same period of 1917.

Shipments of bituminous coal during the week ended Sept. 14 from all producing districts not only exceeded the week of Sept. 7 but also the corresponding week of 1917. Material increases occurred in central Pennsylvania, where shipments amounted to 36,884 carloads as against 31,216 carloads during the week ended Sept. 7, in Ohio where shipments amounted to 28,216 carloads as against 22,455 carloads, and the district including Illinois, Indiana and western Kentucky where shipments amounted to 48,694 carloads as against 42,471 carloads.

A considerable increase occurred in dumping at the Lake ports during the week ending Sept. 14. Total tonnage (including vessel fuel) dumped at the Lake ports this week is estimated at 1,159,296 net tons, an increase of 14.5 per cent. compared with the week previous, and of 9.9 per cent. compared with the weekly average of July, August and September.

Beehive Coke—The production of beehive coke in the United States during the week ended Sept. 14 is estimated at 632,000 net tons as against 615,000 net tons during Sept. 7, or an increase of 3 per cent. The daily average during the current week is estimated at 105,000 net tons as compared with 103,000 net tons during the week preceding. The operators in the Connellsville, Greensburg and Latrobe districts of Pennsylvania report production during the week ended Sept. 14 at 397,047 net tons and the operation of their plants at 77.8 per cent. of present capacity as against 76.2 per cent. during the week of Sept. 7. Yard labor conditions improved slightly during the week.

Byproduct Coke—The production of byproduct coke in the United States was further limited during the week ended Sept. 14 by shortage of labor in Pennsylvania. The operators of the country report production at 89.3 per cent. of their present capacity, as against 90.5 per cent. during the week ended Sept. 7. Of the total losses, shortage of coal amounted to 2.5 per cent., labor trouble to 1.9 per cent., repairs to plant 4.5 per cent., and all other causes, 1.8 per cent.

Maryland was the only state reporting material improvement during the week such improvement being attributed to better labor conditions. Operators in Illinois, Kentucky, Pennsylvania and Tennessee report decreased production. Operators in the states mentioned, with the exception of Pennsylvania, attribute the falling off in production to repairs to plants, while the decline in Pennsylvania was entirely due to shortage of labor.

CARLOADS OF COAL ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

	Week Ended Aug. 24	Aug. 31	Sept. 7	Sept. 14
Bituminous shipments, 123 roads	223,117	223,966	195,367*	222,519†
Anthracite shipments, 9 roads	40,865	41,281	32,234	40,699

* Revised from last report. † Subject to revision.

BUSINESS OPINIONS

Marshall Field & Co.—Current shipments for the week were well ahead of the same period a year ago. Road sales for immediate and also for spring delivery show a very good increase compared with the current week of 1917. The number of customers in the house was about the same. Collections continue good.

The Iron Age—Manufacturers of barbed wire were called to Washington to plan for quickly increasing output, after many weeks of restricted production. The en-

fire capacity, which is 50,000 tons a month, may soon be engaged. Besides American requirements a new call has come for 60,000 tons for Italy and 65,000 tons for Great Britain, and the latter amount may be increased to 90,000 tons. One Pittsburgh mill, on an urgent order for 80-lb. rails for France received on Wednesday, Sept. 11, rolled 20,000 tons before the end of the week. There is an entirely unprecedented volume of shell steel orders; sheets are wanted in large quantities for trench shelters and rolling kitchens, and in all ways the needs of the American army have been pressed upon the steel mills, until for one week the incessant call for ship plates has become an undertone.

Bradstreet's—Indeed, the movement of grain is of enormous proportions, the fixed price of wheat having superinduced heavy marketings and obviated fears of a receding market, heretofore a concomitant of large shipments. Bank clearings run to high figures in the zone outside of New York, more especially at centers where payments for grain and cattle have been heavy. Collections as a whole are good, though some complaint is heard about government payments being rather tardy, and, of course, the heretofore drought-stricken parts of the southwest are backward in making remittances. While the stock market continues dull, prices are relatively firm, and as extensive preparations are being made for the Fourth Liberty Loan, money for speculation is not available, which fact prevents noteworthy response to the very favorable war news received from all fighting fronts.

Dry Goods Economist—"Will the Government fix the price of raw cotton?" This question is being asked in all branches of the dry goods trade, manufacturing, wholesaling and retailing. Because of fear that some such action may be taken in an effort to stabilize the cost of cottons to the Government, to our Allies and to our own people, sales of raw cotton have decreased substantially and quotations have fallen off sharply. The wool situation is perhaps most tersely described in the announcement made early in the week that "There may be a supply of wool for civilian use next year." The explanation of the lack of wool is found in the announcement from Washington that 313,000 soldiers were started on their journey across the Atlantic during the month of August. It must be recognized that this great number of men could not have been transported had the vessels used in carrying them been allowed time for the shipment of west-bound cargoes. As a matter of fact, many of these vessels were unloaded and started back within 24 hours of their arrival on the other side.

American Wool and Cotton Reporter—The mill supply of wool has been conserved by the policy which many plants have adopted of using no more than was a necessity for ordinary cloth production. Although the outlook for manipulated fabrics is brighter, there are still many concerns which will not consider any large production of such fabrics. They believe that it will be safer to produce uniform fabrics at a moderate or small profit, and to hold the reputations which they have built up for over a period of years. Price-fixing is the principal topic of discussion before the cotton trade today. It is regarded by one manufacturer as perfectly feasible to fix the price of the staple, and he estimates that at least 95 per cent. of the trade would favor fixing differentials. It is felt by some that it would not be such a stupendous task as it is regarded by others, and is argued that if wheat can be regulated with its various grades that cotton can likewise be regulated. A price of cotton should be fixed sufficiently high to satisfy the South, and then the price of goods should be fixed so as to make it a reasonably profitable business.

Atlantic Seaboard

BOSTON

Falling off in receipts is more marked. Further embargoes issued in Central Pennsylvania. New car rating expected to be a benefit. Movement all-rail sags at the rate of 800 to 1000 cars weekly. Box cars come forward, but in diminished volume. Dispatch continues slow at Hampton Roads and obviously New England clearances are to be fewer the balance of the season. Baltimore shipments much reduced. New permissible reserve limits have little or no effect, the stocks in this territory having generally exceeded the former limits. Railroad fuel coming forward freely, but certain New England roads seem inclined to push off receipts. Effort made to increase flow of commercial coal via New York piers. Connecticut ports and those along Maine coast need emergency shipments. Anthracite receipts also fall off. "Independents" apparently do less than their share. Rumored that Storrow will distribute a given number of cars per day.

Bituminous—It is evident that receipts in New England will not again this season come up to the level reached in August. The discontinuance of shipments all-rail to a large number of steam-users and the release of steamers and tugs to other Government uses were bound to have their effect upon shipments in this direction, and there will probably not be another opportunity before next season for consumers promiscuously to get coal forward in liberal tonnages. At tidewater the change is particularly marked. Instead of steamers waiting in the stream to discharge there is a decided spot demand for cargoes and again occasionally there are idle berths waiting for steamers to arrive.

Embargo Notice No. 2 has been issued by the District Representative of Central Pennsylvania, of date Sept. 18. The pamphlet has 27 pages with names of consignees to whom shipments must be discontinued. How much this will reduce the all-rail movement to New England is difficult to estimate, for there are other factors in the equation. A large power plant, for instance, may not be embargoed, but yet the entire output of the mine ordinarily its source of supply may be commandeered for byproduct plants or other Government use important to the war program.

Inequalities in car distribution, it is felt, will soon be corrected to quite an extent in Central Pennsylvania. For years the rating for each mine has been figured according to the number of places in a mine rather than being guided by actual output over a given period. In other words, car rating has been apportioned on a basis of 100 per cent. labor supply and labor efficiency. In many cases this has resulted in some mines having empty cars regularly left over after a day's work and in others a deficit in car supply. This subject has now been carefully studied and after raising the question through railroad channels the district representative and the Central Pennsylvania Producers' Association were asked to submit a more equitable arrangement. This has now been done, based on the way operators have handled such cars as were furnished them. It is expected a much fairer distribution will be the result.

All-rail movement from the Central Pennsylvania district has sagged off from 4200 cars or so per week during August to less than 3200 cars during the week ended Sept. 14. Embargoes by the fuel authorities and the diversion of considerable tonnages of byproduct coal contributed to this slackened movement. Wagon coal has also decreased in volume, partly because most of the larger consumers now have satisfactory reserves and partly because of a strong demand from other territory. At one time the number of box cars weekly reached 1100, of which nearly 700 were absorbed by New England. Just now the movement from Central Pennsylvania in box cars is about 400 cars weekly. It is probable this will decrease rapidly now because of the demand to move other freight for which equipment has been lacking.

Hampton Roads dispatch shows no improvement, except as the number of steamers is reduced. Receipts from that quarter will show a decided falling off as compared with July and August, although official figures are not yet available. Certainly the peak for 1918 has been passed and consumers in this territory may regard themselves as very fortunate if they get more than a modicum on their contracts from now out. The volume of coal via the Curtis Bay piers at Baltimore has also been reduced, so that cargoes of "Storrow" coal from that port are much fewer in number.

Railroad fuel continues coming forward in good volume, especially all-rail. There is a disposition, however, on the part of certain of the roads to postpone full receipts, doubtless with the expectation that shipments will be as easy to get later as now. All the roads have been under a strain to get labor to unload coal and there have been such mixtures of quality as to make fuel agents most anxious about coal already in storage. There have been numerous cases of hot coal where plans to receive further volume deliveries have been more or less upset.

There is now a decided effort to get increased tonnages over the New York piers, particularly for Long Island Sound destination. There are also emergency requests from eastern points along the coast where delivery has to be made in small schooners or barges from New York. These are the areas in New England now most deserving of attention from coal distributors.

Anthracite—It is obvious also that receipts of domestic sizes are in the aggregate showing a decline. This is not so noticeable with the larger companies who are distributing along usual lines, but it is perfectly plain that "independent" shippers as a class are not making good their part of the program. They are having an eye to future business rather than to present obligations and here and there is a tendency not to ship the less desirable trade to whom they were eager to make deliveries a few years back. It is largely to fill in these holes that the larger shippers are now being asked to make emergency shipments of coal that would and should go to their own regular trade. It is now rumored that the New England Fuel Administrator is to have a given number of cars per day of "free coal" for distribution. This, of course, will not increase the movement for New England and it must be that Mr. Storrow feels his office can make better distribution than is now being made through trade channels. It should be remembered, however, that this coal is furnished by shippers of whom less complaint can be made in order to make up the deficiencies of shippers who are justly complained of. If this "free coal" could come from the latter it would be of distinct advantage.

NEW YORK

Suspension of mining appears to have had little effect on the New York market, although the companies affected report a falling off in receipts. Market getting down to a winter basis and receipts will assume a general average. Local conditions are encouraging and dealers look for better conditions than existed last winter. Demands for bituminous continue heavy, but there is little complaint heard.

Anthracite—The suspension of operations in many collieries in the lower anthracite regions last week had apparently little effect on local conditions, judging from the report of cars dumped here for the seven-day period ending Sept. 20, 6796 cars having been emptied as compared with 6635 the previous week, an increase of 161 cars. Receipts of coal by the companies whose mines were idle were reduced because of the failure of the men to work, but there was no complaining on the part of the trade.

Receipts each week now average about the same and as the cold weather approaches they are expected to settle down. There is not so much complaining of slow shipments and the trade appears to be in the same frame of mind concerning conditions that will exist here next winter, and that is that there will not be the shortage of coal that existed unless unforeseen circumstances occur.

Reports of production are not as encouraging as they might be. Lack of labor and petty labor difficulties in some of the mines are responsible for a falling off in shipments, which for the week ending Sept. 7 was reported as 1,617,579 net tons, a decrease of 642,137 tons from the previous week.

The Anthracite Committee has announced the lifting of embargoes on various towns in New England and has discontinued the sending of domestic sizes including pea coal, to 80 towns in Maine.

Local conditions are encouraging. Coal is moving freely and the trade is optimistic. None of the shippers have any domestic coal to offer to spot buyers, but there is plenty to meet the necessary demands of regular customers.

The steam coals are in good shape. Buckwheat No. 1 is reported plentiful by some shippers while others have nothing to offer. Most shippers have difficulty to find a ready market for their rice and barley supplies, but they are large enough to force a cut in quotations. Rice is in fair supply, while there is more than enough barley to go around.

Promises of increased allotment of coal for the Bronx have been reported, but warnings have been issued that the consumers there must conserve every pound of coal possible. Similar promises have been made to the consumers of Brooklyn and larger shipments are expected to begin to these two boroughs shortly.

Current quotations, per gross ton, f.o.b., tidewater, at the lower ports are as follows:

Circular	Individual	Circular	Individual
Broken..$6.75	$7.50	Buck...$5.10	$5.90
Egg.... 6.65	7.40	Rice.... 4.65	5.10
Stove... 6.90	7.65	Barley.. 4.15	4.30
Chestnut 7.00	7.75	Boiler.. 4.60	
Pea..... 5.50	6.25		

Bituminous—With receipts far too small to meet the demand conditions are favorable and there is no urgency for coal that goes unanswered. Everybody entitled to it has some coal and many consumers are reported to have good stocks on hand.

The revision of storage regulations announced last week enables many manufacturers to carry larger winter stocks. Consumers in southern New York and New Jersey on the preference list recently defined by the War Industries Board are now permitted to accumulate 60 days storage instead of 30 days. Those in Class 2 may carry 50 days storage; Class 3, 40 days; Class 4, 30 days, and those consumers not on the preference list are limited to 20 days storage.

Production figures are not encouraging. With the labor situation as it now is, and as it is likely to exist for the balance of the war, there is not much hope held out to the consumer. Local dumpings show a falling off of 353 cars for the week ending Sept. 20, as compared with the previous week 7277 cars having been dumped.

State Fuel Administrator Cooke has let it be known that replies received to the questionnaire sent out by him from 21 steam plants which consumed 628,315 tons of coal last year, show that with the improvements and repairs being made by their owners that 68,023 tons of coal will be saved a year, or 11 per cent. of last year's consumption. Altogether Mr. Cooke has received replies from 237 boiler plants in the nine southern counties of New York State, which include Greater New York, and says that if other consumers can do as well the supply of coal will be adequate, providing labor troubles do not suspend operations at the mines.

The car supply is not so good as it was a couple of months ago, but there is not much complaint because of the lack of labor. Some producers might find it hard to load a larger number of cars. Heavy stocks are being taken by the railroads but some shippers complain of the neglect of the companies to pay their bills. Demand for bunker coals continues heavy on account of the large number of vessels constantly coming into the harbor.

Current quotations, based on Government prices at the mines, net ton, f.o.b., tidewater, at the lower ports, are as follows:

	Mine Gross	F. o. b. N. Y. Gross
Central Pennsylvania:		
Mine-Run, prepared or slack.....	$3.30	$5.45
Upper Potomac, Cumberland, and Piedmont Fields:		
Run-of-Mine.....	3.08	5.23
Prepared.....	3.36	5.51
Slack.....	2.80	4.95

Quotations at the upper ports are 5c. higher.

PHILADELPHIA

Anthracite suspension creates anxiety. Public still much concerned. Higher retail prices seem likely. Further local regulations by fuel authorities. Orders not to be completed before Jan. 1. All orders to get some coal at once. City's allotment slightly increased. Steam trade extra active. All sizes sold up but culm. Bituminous unchanged. Car supply only fair. Coal well distributed under new plan.

Anthracite—The strike in the anthracite region hit this district particularly hard, as most of the mines concerned were those supplying a heavy proportion of tonnage to this city. The anxiety was by no means confined to the shipping and dealing interests, but the general public at the first sign of trouble flocked in on their dealers in droves and demanded the filling of their orders. As a result of this the few sizes that showed an inclination to lag were soon cleaned out, particularly egg, and the people forgot all about their preference as to sizes which they so tenaciously clung to all summer long.

In order to make every car of coal reach just as far as possible, the retailers have received instructions that in every case where two-thirds of a customer's order has been delivered they are not to try to make up the final one-third prior to Jan. 1 of the coming year. Of course, exceptions are made in the case of hospitals and the various charitable institutions. The dealers were not exactly surprised at this order, as they have felt for some time that it was the authorities intention that those people who have really received two-thirds of their allotment would be expected to try to make this reach over the entire coal burning season, which will not be so difficult if ordinary winter weather is experienced. All of the orders when entered were based upon the consumption for last winter, one of the worst on record, and there is a suspicion that in addition many of them were padded despite the efforts of the administration to check this evil.

To correct the confusion caused by the dealers receiving stop-orders from the order department of the fuel administration the dealers have been advised that they must not notify the customer that their order has been held until at least three days after the notice has been received. Previously such stop orders have often been withdrawn by the bureau and much confusion caused.

In order to prevent the accumulation of egg and pea coal in the dealers' yards the fuel administrator came out with the suggestion to the public that they accept a mixture of these sizes. It is claimed that while each size by itself is unfitted for use in both range and heater, by combining the two the result is very satisfactory. However, the suggestion came just at the time of the miners' strike and the dealers moved what little surplus they had without the least bit of trouble.

The city was in receipt of a cheering piece of news this week when the authorities announced that the quota for this territory had been further increased over the 18 per cent. allotment to 19.20 per cent. Shippers were notified that this increase was first to take effect in sections where deliveries are hardest in winter, such as Manayunk, Germantown, Chestnut Hill, Wissahickon, Olney and the northeast, and the increased tonnages for these sections are to be delivered to the dealers in September and October.

Following the mine suspension there was quite a flurry in the steam trade. Of course, there never was much of a slackening in buckwheat all summer long, but for several weeks past there was a tendency for rice and the smaller sizes to sag just the least bit among the larger producers. Coincident with the men stopping work inquiries for these sizes multiplied and at this time all sizes are in most active demand. Managers of industrial plants realize that the wage problem is not settled and as a consequence they are finding room for every car of almost any size of steam coal. Even culm shared in the demand to a moderate extent. The price asked for this fuel is generally held by the big shippers around $1.25, but we know of individual shippers in order to move large blocks are willing to shade this figure, although on single car lots are occasionally getting a little more.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

	Line	Tide		Line	Tide
Broken.....	$4.90	$6.25	Buckwheat..	$3.40	$4.45
Egg.....	4.80	6.15	Rice.....	2.90	3.80
Stove.....	5.05	6.40	Boiler.....	2.70	3.70
Nut.....	5.15	6.50	Barley.....	2.40	3.30
Pea.....	3.75	5.00	Culm.....	1.25	2.15

Bituminous—With the war industries on the new preferred distribution basis of a 30-day supply, all coal reaching this territory is being made to reach a wider area than ever. If it were not for the fact that the production is below expectations the situation could be considered satisfactory. There is really no definite improvement in the car supply, this phase of the situation being about as it has been for the past two or three weeks—probably an average supply running from 60 to 70 per cent. With heavy shipments going to lake ports, as well as New England, no appreciable increase in tonnage to this territory can be expected for many weeks yet.

The heavy fine recently imposed on a local shipping company for violation of the price order has created the greatest interest. The one query asked by many is why the purchasers of the coal at prices in excess of the Government figure have escaped punishment. There are also persistent rumors that other concerns are to be given an opportunity to explain apparent violations of the same kind.

BALTIMORE

Diversions of a better grade coal in box-cars noted. Supply continues liberal in regard to soft coal. Anthracite situation causing real worry, and retail organization issues an appeal to the public.

Bituminous—The rerouting branch of the fuel administration as it applies to this territory has made good on its promise to give some better grade coal to Baltimore to offset the almost unbroken run of dirty fuel that had been coming through to the dismay and discouragement of industries. The heavy proportion of box-car coal continues to come through, but business here does not complain so much of the extra cost thus involved when the coal runs of anything like fair grade. The better kind of wagon-haul coal in box cars has been diverted at the gateway scales from the Somerset region. The process of stocking up for short periods by industries here continues under the plan of holding down even the essential plants to a limited supply of fuel. The liberal run of coal here as to quantity is making the situation here easier day by day.

Anthracite—In the hard coal business there is real worry, however. As the weeks roll by, and the deficiency in the anthracite supply for domestic use grows more pronounced instead of being cleaned up by extra tonnage movement, both the fuel administration as represented locally and the coal trade sound warnings to the public. With the coal trade it is a mere reiteration of a warning that it has been giving for weeks to the fuel administration and the general consuming public. The fuel administration here the past week for the first time publicly admitted that its plan to have two-thirds of all orders in cellars here before winter was doomed to failure. At the same time an order was sent out by the chairman of the city committee of the local fuel administration directing that all consumers be given a little coal and that the two-thirds distribution move be discontinued. Word was passed to the trade that a limit of two tons should be placed on the deliveries now. This plan has not met the approval of the coal trade, where it is pointed out that it would not be fair to those with orders on the books for months to cut them off, after the fuel administration has allowed probably half the homes of the city the full two-thirds delivery. In an appeal to the public the Baltimore Coal Exchange shows that it has not abandoned the two-thirds plan. At the same time every effort will be made to give those absolutely out of coal enough to heat their homes during the first days of real cold weather, with the hope that better receipts here will enable further deliveries later.

Lake Markets

PITTSBURGH

Car supplies fairly satisfactory. Essential industries and byproduct coke plants well served. Dirty coal matter receives attention.

Car supplies to coal mines in the district are fairly satisfactory and on the whole reflect an improvement. Labor performance is fairly good, but could certainly be improved. R. W. Gardiner, production manager for the district under the Fuel Administration, is increasing his force for the inspection of coal. He states that complaints of dirty coal are chiefly in connection with wagon mines and stripping operations. Cases are being freely penalized 50c. a ton and decided improvement is expected.

The Pittsburgh district has just emerged from a period of rather drastic curtailment in the use of electric current from 7.30 to 10 a. m., necessitated by shortage of generating power on the part of the public service corporation, not on account of scarcity of coal. Officials of the Fuel Administration are elated over the prompt and full coöperation of the public and the experience indicates that if emergencies arise this winter requiring coal conservation there will be no slacking on the part of the public.

No definite time is yet assigned for the completion of lake shipments from the district, but it is practically certain that shipments will have to extend beyond Oct. 15. Essential industries are being fully served, including the byproduct coke plants, the only difficulty as to the latter being that stocks are not being accumulated to the extent desired. There are scarcely any open market transactions. The market remains quotable at the set limits: Slack, $2.10; mine-run, $2.35; screened, $2.60, per net ton at mine, Pittsburgh district, with 15c. extra allowed to be charged by brokers to consumers and retail dealers.

TORONTO

Cool weather finds many consumers without fuel. Plan for relief adopted by dealers and large deliveries suspended until all are supplied. Public advised to burn wood or other substitutes.

There is no marked change in the coal situation except that with the setting in of cool weather the demands of consumers who have not been able to lay in supplies have become more urgent. Many of the dealers are still refusing new orders. As

the result of a conference between the coal dealers, the city fuel controller and the Board of Control the dealers have agreed to suspend deliveries of large orders in hand until those consumers who are absolutely without fuel have been supplied. Those having no coal must forward applications in writing before Sept. 25, when they will be furnished with small quantities. A large number of applications have been received. The regulation allowing consumers to receive 70 per cent of their regular supply has been cancelled and the people are asked by the city fuel controller to burn wood or other substitutes so long as the weather continues mild.

Quotations for best grades per short ton are as follows: Retail anthracite, egg, stove, nut and grate, $11 to $11.50; pea, $10 to $10.50; bituminous steam, $9.25; slack, $8.25; domestic lump, $10.50; cannel, $13. Wholesale f.o.b. cars at destination, three quarter lump $7, slack $5.82.

BUFFALO

Quiet in bituminous, not active in anthracite, but much complaint of slow anthracite deliveries. Retailers refuse to take more orders.

Bituminous—The situation does not change materially, but it is plain that the authorities are not going to allow any surplus to accumulate anywhere, for the order goes out again directing curtailments in various directions. All jobbers report that they could sell more coal if they had it, but the supply is fairly good and the outlying territory appears to be accumulating some coal. If the war needs are not too great the supply will go around in some fashion, though it is plain that the coal will all be needed somewhere. If it is fairly distributed no distress should be experienced, though the concerns adjudged unnecessary will not get much.

Bituminous prices are still mostly made to consumers at the mines, but the delivered prices with all charges paid, are as follows: Thin-vein Allegheny Valley, all sizes, $4.65; Pittsburgh lump, $4.45; Pittsburgh mine-run and slack, $4.20; smithing and smokeless, $5.85; cannel, $5.60 to $6.10, all per net ton, f.o.b. Buffalo.

Anthracite—The situation is becoming quite strained. In spite of the promises of the fuel authorities and the fairly liberal allotment the supply has steadily run down, till the consumers are becoming alarmed. The retailers are refusing to book any more orders, saying that they cannot fill what they have. It is estimated, though, that about 95 per cent. of the coal needed is already ordered and the fuel authorities continue to say that the delivery will be made in good time. As it looks now it will mostly wait till the lakes close in December. If the daily lake movement of 100,000 tons is then turned over to the city the shortage will be made up in a week, and perhaps that is the plan, but the consumers see in the delay a prospect of continued shortage.

CLEVELAND

Bituminous is moving to the Northwest in record-breaking style, each succeeding week seeing the movement up the Great Lakes heavier. Suspension of shipments of Ohio and western Pennsylvania coal to the Michigan peninsula has served to increase both the tonnages available for the lake trade and industrial and retail consumers.

Bituminous—The heavy inroad Labor Day made upon coal production in the No. 8 district of southern Ohio is shown by the latest report of the Pittsburgh Vein Operators' Association of Ohio, which is for the week ended Sept. 7. In that week operators belonging to the association shipped 4408 cars, divided as follows: 2571 to the lake trade, 896 to Ohio, 661 for railroad fuel, 174 for Michigan and Indiana, and 106 for Canada. In the week ended Aug. 31 the carloads of coal shipped totaled 8876, which shows the loss Labor Day week was close to 50 per cent. Some Indiana and Illinois coal is coming into the state for railroad fuel, operators say, which is increasing the tonnage for the lake trade. The Pittsburgh Vein Association's most recent car supply report is dated for the week ended Sept. 14, and it shows the shortage for the week averaged 15.47 per cent. The shortage of 1298 cars in the week resulted in a loss of 64,900 tons. The railroad rating of the operators reporting is 8391 cars and the number of cars supplied was 7093. On the whole, recently, car supply has been good, much better, in fact, than labor. Registration day was almost wholly lost in many southern Ohio mines, and now county fairs are a diversion. Shipments to retail dealers have increased somewhat, though dealers' needs are by no means being met. Householders seem over-eager to store for the winter. Industrial plants are in the market for all the bituminous they can obtain, but operators are hewing close to the storage-limit line.

Lake Trade—Beyond all shadow of doubt the movement of bituminous to the Northwest via the Great Lakes is at its best so far this season. In the week ended Sept. 14 the lake fleet loaded 1,114,923 tons, not including bunker coal, at lower lake ports. In the first 15 days of September, which includes Labor Day, three Sundays and registration day, the fleet loaded 44,305 cars, which is about 2,000,000 tons. Coal is coming forward to the lower lake ports rapidly and the lake tonnage to take it aboard is immediately available. The prospects for moving the Northwest's quota grow brighter steadily. Detailed figures just put out by the Coal and Ore Exchange, Cleveland, which is conducting the lake traffic pool this season, show that up to Sept. 1 a total of 16,833,638.04 tons of bituminous was loaded at the lower lake ports, of which 16,089,511.94 tons represented cargo fuel and 744,126.10 bunker fuel. For the various months to date the loading of cargo and bunker fuel combined has been: April, 868,852.64; May, 3,194,198.10; June, 3,539,352.30; July, 4,234,305.05, and August, 4,996,929.95. The August loading was divided into 4,805,710 tons of cargo coal and 191,219.95 tons of bunker.

DETROIT

Need of larger supply of domestic coal becomes more evident. Steam coal users object to Illinois and Indiana stock. Lake movement active.

Bituminous—Continuance of cold rains and chill weather makes more impressive the insufficiency of Detroit's supply of domestic fuel. Homes are being made uncomfortable by weather conditions and in many instances the householders are deterred from warming their homes, either because they have no coal or because the scanty supply at hand renders them apprehensive that were they to consume part of it now, they may find themselves without fuel when even colder weather comes.

Stocks of bituminous coal suitable for household use are not being increased to any marked degree. Some retail dealers say they are unable to fill orders, unless customers will take mine-run, which is not adapted to use in hot air furnaces. Shipments from the Ohio, West Virginia and Kentucky districts which are now restricted for retailers, and to use of gas and byproduct plants and railroads are said to show a somewhat larger proportion of prepared sizes than earlier in the season, though as a whole the movement is described as of lesser volume, due to the limited market for slack and mine-run and to the continued operation of the priority order relative to lake coal.

Consumers of steam coal show much reluctance to stock up with the coal from Illinois and Indiana mines to which they are restricted by the order of the Federal Fuel Administration. Jobbers say the coal coming from those districts is of an inferior quality and that the more desirable product of the mines is being retained for home consumption.

Anthracite—Receipts of anthracite coal in Detroit to Sept. 19 approximate 25,000 tons, contracting with about 31,000 tons for the entire month of August. Retailers have practically no stocks on hand and in filling orders from owners of base-burners, which have priority over all others, are dependent for the most part on day-to-day shipments. Baseburner owners are allotted a maximum of three tons and until all have been supplied whose orders have been placed with dealers or the fuel administration, the other consumers must wait.

Lake Trade—During the week ending Sept. 14 a new high record was made for the season in loading bituminous coal for lake movement, the docks having dumped 1,114,832 tons, exclusive of bunker coal. The volume of shipments is being fairly well maintained through the present week.

COLUMBUS

Still a softness in the market for small sizes, due to the continued embargo against shipping screenings into Michigan. Domestic sizes are in good demand and a heavy tonnage is moving to the lakes for shipment to the Northwest.

The principal feature of the coal trade in Ohio is the continued softness in screenings, which has caused the Ohio Administration to modify its orders concerning storing on the part of large steam users. The prohibition against about 700 concerns in Ohio has been removed temporarily in order to absorb the larger amount of screenings on the market. Domestic and lake trade are both active. The domestic situation is generally considered satisfactory.

The lake trade is being pushed as much as possible in order to secure the required quota for the Northwest before the close of navigation. As a result special pains are being taken to move vessels and the movement is generally efficient. Reports from the Northwest show that there is no congestion on the docks and the interior movement is active. Lake prices continue firm.

The domestic trade is now attracting considerable attention. Retailers have a good run of orders and are making deliveries rapidly. They are receiving a fair proportion of the tonnage required. Reports in Columbus show that fully 65 per cent. of coal for private use has been stored by consumers.

Production is rather good although labor shortage is curtailing the output at many of the mines. Car shortage is also having its effect and on the whole the outlook is not encouraging. It is estimated that the output in the Hocking Valley and Pomeroy Bend districts has been about 70 per cent. during the past week. Eastern Ohio produced about 65 per cent. and the same figures are reported from Crooksville and Cambridge.

CINCINNATI

Cool weather has stimulated demand, while modified storage regulations have also helped movement. Car supply remains fairly good, and shipments continue heavy.

Frosty weather, following a period of cold and rain coming unusually early for this section, resulted in more active demand for coal for heating, domestic consumers, office buildings and others requiring fuel for this purpose for the first time during the season. At the same time the industrial demand received a direct stimulus in the shape of a removal of the restrictions formerly placed on the storage of coal by Washington, an increased supply being allowed under the regulations announced. This change enables industrial consumers to use more coal than they were at first allotted, as far as a reserve supply is concerned, and large dealers and operators at once received rush orders indicating the intention of these consumers to take advantage of the Government's permission.

While there has at no time been any difficulty on the part of the trade in placing all available coal, the increased demand resulting from the regulations referred to is gratifying, making it certain that business will continue steadily at its present high level. Nothing has occurred, however, to change the practical certainty that demand will run ahead of supply as the season advances, especially in view of the limited ability of the railroads to forward coal. In spite of the protestations of transportation officials, there is little doubt that the principal reason for the prospective shortage of fuel, as compared with consuming requirements, is the apparent inability of the railroads to place and move a sufficient number of cars to take care of the maximum production of the mines. The car supply is fair, but nothing like 100 per cent.

LOUISVILLE

Domestic demand lighter and dealers making first surplus accumulations of season. Steam demand good, but checked by fuel administrator. Better movement of eastern Kentucky coal to Louisville. Production about the same.

While there has been some improvement in the number of domestic orders handled during the past week, the heavy stocking appears to be over with except on orders held up for eastern Kentucky coal. At present the domestic demand is largely for one and two ton lots. A better supply of eastern Kentucky mine-run, as well as lump and screenings, is coming on this market, several retailers being able to secure a little of the grade.

The Fuel Administration is beginning to hold back deliveries to steam consumers, regulating them to the supplies as announced some weeks ago. Mining companies and jobbers have been forced to hold up numerous orders placed some time ago, and upon which only partial deliveries have been made. Present stocks must be reduced before further deliveries can be made. However, as a whole the steam demand is active, although no heavy stocking can be done.

For the first time in many months some of the local retailers have been receiving

more coal than consumption is taking care of, with the result that yard stocks are improving and a few concerns have a slight surplus. Yards have been empty all season, and at the present time a number of dealers are more anxious to lay in surplus stocks than to make deliveries.

Conditions at the mines show little change. Eastern Kentucky is getting an erratic supply of cars, but about 50 to 75 per cent. regularly. Much better care is being taken of eastern Kentucky mines than those in western Kentucky, in an effort to move coal to the Northwest and Lakes. Western Kentucky is getting a 33 to 40 per cent. supply. However, labor is generally so scarce that the small car supply isn't making the customary difference. Considering the number of men employed production is holding up remarkably well.

BIRMINGHAM

Steam trade easy. Domestic demand brisk. Production lagging, and little improvement, if any, over previous week. Labor shortage, and in some instances lack of adequate car supply holding production far below normal.

Inquiries in trade circles elicit the information that the steam coal market is in a much easier condition now than for several months past, some rail lines having accumulated a 30-day stock, and consumers generally are in a more comfortable position as regards fuel. There is ample business being offered and in hand to prevent the accumulation of any surplus at the mines, however, and the daily output is being moved promptly when cars are in hand.

The foregoing is not true in the domestic channel, however, and there is a persistent and unabated call from the dealer, and in turn from the consumer. Receipts are fair considering operating conditions and transportation facilities, but there is no accumulation worth mentioning in the yards.

A number of mines on and immediately adjacent to the Warrior River are being badly handicapped in operation by the temporary suspension of the barge lines to New Orleans, Mobile and other port markets pending the transfer of the equipment to government control and operation. The Bamford mines, located on a branch of the Southern Ry. near Bessemer, have resumed operation after an idleness of many years.

Coke

CONNELLSVILLE

Slightly heavier production. Probable effect of new draft. Efforts to improve coke quality.

The Connellsville region is doing a shade better, both in making coke and in shipping coal for byproduct purposes. Labor performance is a trifle more satisfactory, but fears are entertained as to the effect of the new draft. Apparently this will effect some realignment in labor conditions. It ought to insure better performance on the part of miners and such oven labor as may be held to occupy "key positions," as they will lose their industrial exemption if they do not work faithfully, while on the other hand the ranks of common labor may be reduced.

Following the Fuel Administration's order effective Sept. 16, prohibiting the screening of old dumps at beehive coke works to regain coke for household use, the matter was taken up by interested parties with the Fuel Administration, resulting in an agreement whereby the operation will be placed under closer surveillance, waste of labor will be avoided and the price limit will be reduced to $5.50, the screen being reduced from ¾ in. to ½ in. Tailings, if entirely free from dust and dirt, will be salable at $3, but it is probable that some contracts will not attempt to prepare the tailings at all. Box cars are to be used exclusively.

The Fuel Administration continues its efforts to bring about the production of better quality coke. Furnaces insist it is quality of coke, not quantity, that is interfering with full production of pig iron. Some comparisons made indicate that the furnaces in blast are producing about 3,000,000 tons a year less pig iron, or 7 or 8 per cent. less pig iron than their capacity, as indicated by past records when fewer furnaces were in blast, and the major portion of the loss is attributed to the quality of the coke available. The prevailing opinion seems to be that operators and coal miners are about equally to blame. The least increase in the amount of slate, etc., mined, decreases the output of pig iron by increasing the ash in the coke. There is practically no open market, except for foundry coke. We quote: Furnace $6; foundry, 72-hour selected, $7; crushed, over ¾-in., $7.30; clean screenings from old dumps, over ½-in., $5.50, per net ton at ovens.

The "Courier" reports production in the Connellsville and Lower Connellsville region in the week ended Sept. 14 at 348,130 tons, an increase of 3110 tons, and raw coal shipments at 216,185 tons, an increase of 12,467 tons.

Buffalo—The trade is steady and sufficient with the combined output of local byproduct and ordinary beehive ovens. Local jobbers sell quite an amount of the low end of the byproduct coke at regulation prices, mainly for fuel, which run at $4.34 to $7.68 for various sizes. Most jobbers do not go into the trade, as they cannot get the foundry and furnace coke. The movement of iron ore is still heavy, being to Buffalo 1,561,149 gross tons for August and 5,434,980 tons for the season to September. The entire amount received by the nine Lake Erie ports was 7,736,791 tons for the month and 29,633,200 tons for the season.

Birmingham—The demand for coke in the local market is strong for both furnace and foundry grades, but the supply is woefully short. Production at the ovens has been far below normal for several weeks past, labor troubles, and in some instances shortage of coal, crippling the output. The closing down of the Mary Lee mines of the Alabama Company account of accidental flooding Sept. 3, has caused a heavy loss in the output of furnace coke by this company and the diversion of the output of Brookwood ovens for furnace use, this coke going largely to the foundry trade heretofore. The Fuel Administration has announced the following prices f.o.b. ovens for Alabama beehive coke, based on a net ton of 2000 pounds:

	Furnace	Foundry
Big Seam	7.00	8.00
Yolande, Cahaba, Black Creek, Jefferson	8.75	9.75
New Castle (Big Seam) Pratt, Brookwood, Nickel Plate	7.85	8.85
Empire Coal Co. (Black Creek)	....	10.50
Big Seam (Upper Bench)	8.50	9.50

Middle Western

GENERAL REVIEW

The present coal situation, in the Middle West, so far as market conditions are concerned, is peculiar. Coal that has been hard to get throughout the season is now being offered freely. In fact, practically the only coal which is sold without difficulty, and at full Government prices, is the higher grade products from the southern Illinois fields.

As a rule, except in some isolated localities, the domestic dealers have on hand all the bituminous coal their sheds and bins can hold. Generally speaking, this puts the retailer in a position to pick and choose, and naturally, he is now going to purchase only the best he can get.

The steam market is weak, especially for screenings, for two reasons—first because the average manufacturer has a substantial storage pile, and second, because numerous fires, caused by spontaneous combustion, have broken out in a great many storage piles. These fires have naturally caused the steam users to issue instructions, holding up the balance of their respective unfilled orders and, as a result, the market has been actually glutted with both mine run and screenings.

MILWAUKEE

Coke advanced 75c. per ton, despite the Fuel Administration's order making a cut of 30c. Byproduct companies hold that they are within their rights. Coal receipts continue heavy.

There have been no price changes in either hard or soft coal since last week's report. Retail dealers are taking no new orders for anthracite, as a rule, as they are barely allotted enough by the dock men to enable them to fill orders now on hand. Coke is also practically out of the retail market.

Coke is now selling at $11.50, an advance of 75c. The increase in price caused considerable comment, in view of the fact that the Federal Fuel Administration recently announced a cut of 30c. per ton in coke, except in the States of Alabama and Washington. Milwaukee coke producers claim, however, that they are really selling at 75c. less than the official schedule, and that they are entitled to $12.50 per ton. They hold that the base price of coke at Connellsville, Penn., is $6.20 per ton f.o.b. cars, after deducting the 30c. ordered by the Fuel Administration. Adding the freight rate from Connellsville, or $3.75, brings the total cost of coke landed in Milwaukee up to $9.95 per ton. These figures are increased by the addition of $2.25 per ton, the margin allowed coal men from vessel to cars or delivery wagons, making the total $12.20 per ton. These figures are held to be specious in a way, inasmuch as the freight rate on the soft coal used by the byproduct companies is 55c. per ton, and the $2.25 margin from vessel to cars and wagons is designed for yards handling coal solely as fuel. The cost of handling the coal from vessel to the ovens is in reality a byproduct expense. The leading byproduct company here claims to be 75,000 tons short in its coal supply, with no prospect that the shortage can be made up before winter sets in.

Coal receipts by lake thus far in September aggregate 61,228 tons of anthracite and 348,510 tons of bituminous, making 426,205 tons of the former and 2,494,922 tons of the latter thus far this season. As there are close to three months of navigation left, these figures are capable of being greatly increased.

ST. LOUIS

A continued quiet easy market with no demand for anything and steam sizes heavy. Country demand easing up. Domestic business almost at a standstill. Cars more plentiful and transportation better.

The market continues quiet, with nothing to indicate that there will be any change. The steam market is unusually inactive and screenings, mine-run and other steam sizes are heavy. The tonnage of this coal that formerly moved to Chicago is not going in that direction on account of storage piles being afire. Locally there is very little steam storage. The domestic demand is easy everywhere and the expected heavy demand from the country has not materialized.

In the Carterville field cars are a trifle more plentiful and transportation has shown improvement; the bulk of this coal still goes to the railroads and the rest is moving north on account of the zone restrictions, which will prohibit it moving into Minnesota after the 30th of this month. As a result little is going into the southern and St. Louis market. The past week was an unusually poor one in that field on account of the Illinois registration and primary, and the county fairs.

Similar conditions exist in the Duquoin field, with little of this coal moving in this way. There has been an usually heavy surplus of domestic coal and other sizes in the Mt. Olive field. Some companies have had a hard time keeping their mines going on account of no orders. A good tonnage of this is moving to the north, but not in sufficient quantity to relieve the local conditions.

In the Standard field the surplus continues, but to a greater extent, and many operators have had trouble keeping their plants running on account of having no place to ship their coal, and this is likely to continue for some time. The car supply in this field has shown considerable improvement the last week and transportation is better. The prospects are good for a rather quiet four or five weeks for the mines in this district unless something unusual occurs that will bring the coal into the northern market.

A little Arkansas moved in the past week. The St. Louis Fuel Committee held a hearing on byproduct coke and asked the producers to agree to a reduction of from $9.90 to $9. This will make the retail price on domestic coke $12.50, which would be the price of anthracite at this time. Gas house coke, prepared sizes, is $11.75, and lump $11.25.

The prevailing market is per net ton f.o.b. mines:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump	$2.55@2.75	$2.55@2.75	$2.40@2.70
3x6-in. egg	2.55@2.75	2.55@2.75	2.40@2.70
2x3-in. nut	2.55@2.75	2.55@2.75	2.40@2.70
Washed:			
No. 1	3.05@3.20	3.05@3.20	.....
No. 2	3.05@3.20	3.05@3.20	.....
No. 3	3.05@3.20	3.05@3.20	.....
Mine Run	2.35@2.50	2.35@2.50	2.20@2.30
Screenings	2.17@2.32	2.17@2.32	1.50@1.60

Special preparation on Carterville is 10 cents extra. Williamson & Franklin Co. rate is $1.10. Other fields 95 cents.